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Name: Advait Parey (2013B3A30462G)	479

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Student	480
Name: Sadhana Srinivasan (2013B4A40654P).....	480
<i>PS-II Station: Samsung R &D Institute - CP (Communication Protocol), Bangalore</i>	482
Student	482
Name: Anurag Chakraborty (2011HD240727H)	482
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Student	483
Name: Kartik Kenny (2014A7PS0078G)	483
Name: Aparajita (2014A7PS0090G).....	483
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Name: Simran Kaur (2013B3A70702P)	485
Name: Umang Dhiman (2016H1120151P).....	485
Name: Apurva Kulkarni (2013B1A70377P)	486
Name: Jay Kadam (2016H1120164P).....	486
Name: Saumya Goel (2016H1120160P).....	487
Name: Karan Deep Batra (2014A7PS0160P).....	488
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Name: Rahul Singla (2014A3PS0236P)	489
Name: Sarthak Jain (2014A3PS0274P).....	489
Name: Sayan Rudra Pal (2014A3PS0017P)	490
Name: Lavhale Akshay Shivajirao (2014A3PS0762G)	490
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Name: Harshavardhan Valluru (2014A3PS0220G).....	492
Name: CHOVATIYA JVALANT ASHOKBHAI (2016H1230032G).....	492
Name: SHIVANSH PATHAK (2016H1230035G)	493
Name: Raveena Raikar (2016H1400039G)	494
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Student	496
Name: Apoorva Shridhar (2013B4AA0779H).....	496
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Student	497
Name: Shubham Ramdas Pagui (2014A7PS0040G).....	497
Name: Vatsal Goyal (2014A7PS0067G).....	497
<i>PS-II Station: Symantec Software Solutions Pvt. Ltd. - Data Structures and Algorithms, Pune</i>	<i>499</i>
Student	499
Name: Krutarth Nakade (2013B3A70574G).....	499
Name: RAVINDRA BUDDHELAL CHATURVEDI (2013B5A70674P).....	500
Name: Sanket Chaudhari (2014A7PS0004G)	500
Name: Sagar Gupta (2014A7PS0030H).....	501
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Student	502
Name: Thota Sowmya Sree (2014A8PS0462H).....	502
Name: Suryansh Upadhyay (2014A8PS0779G).....	502
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Student	504
Name: Hariram S (2013B5A70655H)	504
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Student	505
Name: Vibhor Khetrapal (2016H1490256P)	505
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Student	506
Name: Aviral Chauhan (2014A4PS0387G)	506
Name: Prakhar Srivastav (2014A8PS0450P)	507
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Name: NAVNIT ASHOK KHANKE (2016H1490234P).....	508
Name: Ankit Gangwal (2016H1490221P)	509
Name: Pranav Sood (2014A7PS0155P).....	509

Name: Akshay Gupta (2016H1490236P)	510
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Name: Ronak Jain (2014A7PS0017G)	511
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Name: Buddhavarapu Spandana (2013B2A20826P)	513
Name: Kshitij Mathur (2013B5A40559G)	513
Name: Himanshu (2016H1030071P)	514
PS-II Station: USt Global Infinity Labs-Block Chain, Thiruvananthapuram	515
Student	515
Name: B Varun Reddy (2013B2A40777G)	515
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Student	516
Name: Amith Thomas (2014AAPS0256H)	516
Name: Chiman Jain (2014A3PS0277G)	516
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Student	517
Name: J D N DINESH (2014AAPS0256H)	517
Name: Neel Khakhar (2014A4PS0340P)	517
Name: Devdutt S (2014ABPS0629P)	518
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Student	519
Name: Yedukrishnan A V (2016H1030072P)	519
PS-II Station: UST Global Infinity-Cloud Computing, Thiruvananthapuram	520
Student	520
Name: Shreyansh Agarwal (2012A3PS0131P)	520
Name: K S Vamsi Reddy (2014A3PS0139G)	520

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Name: J. Bhargav Raju (2016H1120167P)	521
Name: Varun Kumar Kadambala (2014A8PS0424G)	521
Name: G SAI SAMHITHA (2014AAPS0296H)	522
<i>PS-II Station: UST Global-Infinity Labs- Augmented Reality, Thiruvananthapuram</i>	523
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Student	523
Name: Sachin Suresh (2014A4PS0253G)	523
Name: Shashank Subramaniam (2014A4PS0327G)	524
Name: Karnam Venkata Sai Naveen (2014A4PS0233P).....	524
Name: Akshaya Singhal (2014A3PS0186G).....	524
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Student	526
Name: Someswar Roy (2015H3130074H).....	526
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Name: RUSHABHA SHAH (2016H1410047H).....	527
Name: Siddhesh Mane (2016H1410096P).....	527
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Student	530
Name: Rahul Ladda (2014A7PS0078H).....	530
Name: Raghav Keesara (2013B4A70097P)	531
Name: Snehith Alapati (2013B3A70709G).....	531
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Name: Aman Garg (2014A7PS0073H).....	534

Name: Anshul Chhabra (2013B2A70803P)	535
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Name: Kshitij Gandhi (2013B1A70858P)	542
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Name: Suyash Kumar (2014A7PS0053P)	544
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Name: Sreemanjari Kandhasamy (2014A5PS0813H).....	545
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Name: Sneha Mahesh (2014B1PS0969P)	547
Name: Hridhay M (2013B2A80732P).....	548
Name: Paras Luniyal (2016H1290003H)	549
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Name: Kanika (2016H1290004P)	550
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Name: Mahesh Jaju (2016H1470184P).....	552
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Name: Mansi Deshpande (2016H1460193P).....	554
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Name: Amarjeet Kamal Gupta (2016H1460195P)	555
Name: Aniket Avinash Kulkarni (2016H1460190P).....	555
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Name: Vinayak mharugde (2016H1460191P).....	557
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Name: Nishant Chandrashekhar (2014A4PS0357G).....	564
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Student	565
Name: Arun kumar (2014D2PS0984P).....	565
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Student	566

Name: Paras Vohra (2016H1490209P)	566
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Name: Deepak (2016H1460198P).....	569
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Name: Kartik Bhargava (2016H1290006P)	571
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Student	572
Name: Rajarajeshwari (2016H1460194P).....	572
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Name: AMALA SAJU (2016H1460061H)	575
Name: V SAI HEMASRI (2016H1460069H).....	576
<i>PS-II Station: Piramal Group, Mumbai</i>	578
Student	578
Name: Samyadeep Basu (2013B1A70401P)	578
Name: Shantanu Jain (2013B3A70547G).....	578

Domain: Core Engineering

PS-II Station: A.T.E. Enterprises Private Limited, Research & Development, Bangalore

Student

Name: Mukesh Sharma (2016H1480051H)

Student Write-up

Short Summary of work done during PS-II: Design, fabrication and modeling of two stage evaporative cooling unit. An alternative to conventional air-conditioning system is described here as a 100% fresh air ventilation and air-conditioning unit. The design constraints, heat balance and mass transfer were analyzed initially. A study of conventional and existing models based on international standards design and testing procedure was also studied. Based on which an existing two stage evaporative cooling model was tested and verified on-site. After testing and verification of existing model, a MATLAB program for modeling of Indirect evaporative plate type heat exchanger was done to find out the temperature at each point of the heat exchanger, hence its size could be optimized. Scope of new design of heat exchangers were also studied.

Tools used (Development tools - H/w, S/w): MATLAB

Objectives of the project: Design, fabrication and modeling of two stage evaporative cooling unit.

Major Learning Outcomes: international standards and testing procedures on an On-site work experience.

Brief Description of working environment, expectations from the company: Although the work was given in scraps and testing and working experience was not good. The company was more concentrating on sales of their two stage evaporative cooling unit, rather than Research and development. Lab testing and process of analysis after test was minimal. They didn't have proper working software and tool. I utilized my own laptop to work on MATLAB and further study.

Academic courses relevant to the project: Conduction and convection heat transfer, Computational fluid dynamics and Heating ventilation and air conditioning.

PS-II Station: A.T.E. Enterprises Private Limited, Pune

Student

Name: Rounak Biswas (2016H1490251P)

Student Write-up

Short Summary of work done during PS-II: HMX provides Indirect-Direct Cooling Solutions to industrial workshops and factory sheds. But it wants to target the commercial markets due to their huge economic potential and hence launched its standardized cooling product called IDECool 6, in 2017. They have planned to scale up their marketing activities aggressively across the country and hence devising a marketing plan for the Financial Year 2018-19.

Tools used (Development tools - H/w, S/w): Microsoft Excel, Microsoft Word, Microsoft PowerPoint were used.

Objectives of the project: To develop, implement and monitor the Marketing Communication Plan of IDECool.

Major Learning Outcomes: A Marketing Communication plan of a product was developed from scratch and rolled out across India. It is a huge marketing and branding exercise. A lot of negotiation, marketing research and man-management skills went into the development of the plan.

Details of papers/patents: No papers and patents were required in this.

Brief Description of working environment, expectations from the company: The organization literally misused me like an salesman initially. A lot of expenses had been incurred which had not been reimbursed. People were rude and had unrealistic expectations from an intern. Yet, gradually things settled down. A turnaround happened. All assignments were delivered ahead of schedule. as an acknowledgement of effort, I was invited to the Business Unit's Strategic Review Meet. Obstacles were turned into opportunities.

Academic courses relevant to the project: Marketing Research, Product and Brand Management, Marketing, Negotiation Skills, Organizational Behavior, E-Business & Internet Marketing.

PS-II Station: Aditya Birla Insulators, Halol

Student

Name: Ajinkya Bedarkar (2016H1420118P)

Student Write-up

Short Summary of work done during PS-II: Improving the inventory turnover ratio by some Inventory management techniques.

Tools used (Development tools - H/w, S/w): MS Excel

Objectives of the project: To improve the Inventory turnover ratio.

Major Learning Outcomes: Inventory management of about 3200 MT of finish good inventory.

Brief Description of working environment, expectations from the company: Working environment is good. They were very much interested in implementing our suggestions and they wanted deliverables from us. Company should provide internet facility to trainees.

Academic courses relevant to the project: Supply chain management.

Name: Avi Nahar (2016H1490265P)

Student Write-up

Short Summary of work done during PS-II: Aditya Birla Insulator produces porcelain insulator for power grids and stations. Being an old industrial plant the movement of insulators inside the plant undergoes multiple unwanted as well as mostly manually handled movement which leads to damage, inefficiency, longer lead time and less productivity. The project was aimed at reducing the manual touch points in the production line. Recommendations given were: Part 1: Daily Charging of Raw Materials is done manually and is a repetitive process. Recommendation: Use of Machine claw for this process. Part 2: Reduction of Touch points through standardizing the H3 Production process and reducing the daily standard deviation. After analysis of processes, Electrical Dryer came as bottleneck. Recommendation: Creation of one more ED., Making ED#51 into racks like others, Unused PD#9 has racking system, could be turned as EDi, Defining Product mix to be produced with the existing Machinery. Part 3: H3 insulator undergoes overlapped and congested Movements in the plant leading to higher lead time, more manual handling

and higher damages. Recommendation: I, Alignment of PM #6 near to PM #15i, ED 5, 6 to be created in the place of old channel Dryer. I Creation of 4 Combination Dryer at the old Tunnel Kiln Spacei, Converting SD #22, 23, 24, 25 to CD.

Tools used (Development tools - H/w, S/w): Excel, Mini Tab, E-draw, and Arena Simulation.

Objectives of the project: Finding and implementing changes in the production line to improve efficiency and reduction in the overall time and cost. Reduction in 5-10 manual touch points out of 235 will results will reduce the overall cycle time and waiting time. Also, it will reduce the overall distance traveled by an insulator by 15%. This will lead to bring down the overall rejection rate. Also, Lesser human intervention, more efficient process, Improved Cycle time.

Major Learning Outcomes: Production process of porcelain Insulator Manufacturing and its processes. Learnt the working software like E-draw, Mini Tab and Arena Simulation. Understanding of the industry verticals and their coordination to achieve the desired target. Explored about the matrices used to quantify the findings. Learnt about the Machine capacity and worker capacity utilization.

Brief Description of working environment, expectations from the company: Environment was very friendly and supportive throughout the PS, They were always looking for the deliverable to be implemented as soon as possible in the field. Employees and the management team was very helping and were interested in the intern's point of view on the project given. All the accommodation, food and transport facility was provided by the ABI team for the five months period.

Academic courses relevant to the project: Operations Management, Project Management, Project Appraisal, Supply Chain Management.

Name: Harsha Vardhan (2016H1490229P)

Student Write-up

Short Summary of work done during PS-II: I have calculated cost of poor quality and did time-motion study metal parts vendor. Analyzed the quality control points along the supply chain. Implemented quality assurance to decrease defects at metal parts vendor end.

Tools used (Development tools - H/w, S/w): Six sigma quality control charts and Failure Mode Effect Analysis.

Objectives of the project: To implement Quality Assurance and control measures at major vendors.

Major Learning Outcomes: Our PS organization helped us implement theoretical learning such quality assurance and vendor management with respect to bottom line and scorecards. Also, implementation of quality at source to decrease the lead time is great learning by doing.

Brief Description of working environment, expectations from the company: We expected PS will be more of learning experience of manufacturing industry. But over the course of project, we got a chance to analyse business processes across departments and also implement recommendations after analysis and validation from the management. This has given us perfect launchpad into industry and a sense of confidence for facing our career challenges.

Academic courses relevant to the project: Supply Chain Management, Productions and Operations management, Total Quality Management.

Name: Karthik Maddipoti (2013B2A40830P)

Student Write-up

Short Summary of work done during PS-II: Aditya Birla Insulators manufactures a range of ceramic and porcelain insulators which are customized as per the needs of their domestic and international customers. The insulator is an assembly of the insulator shell, and metal parts at the top and bottom end of the shell. The design and production of the insulator shell is done completely in-house, whereas for the metal parts, its manufacturing is out-sourced to multiple vendors. The cost of production of metal parts is directly proportional to the weight of the metal part. The purpose of this project is to reduce the weight of metal parts which in turn reduces the production cost of the metal parts. The products at Aditya Birla Insulators (ABI) are highly customized as per the requirements of their customers. There are more than 200 different designs of metal parts at ABI. In this project, the designs for weight reduction were selected on the basis of the total consumption (in terms of weight) in one year. The focus for weight reduction was narrowed down to six designs, out of which three designs were successfully optimized with a significant weight reduction. Finite Element Method (FEM) was used to run simulations to determine the stress distribution in the metal parts and to evaluate the results for the designs before and after weight reduction. FEM is a method which uses approximations. To determine the validity of the simulation results, samples were prepared for physical verification and testing.

Tools used (Development tools - H/w, S/w): Solidworks 2016.

Objectives of the project: Weight Reduction of Metal Parts.

Major Learning Outcomes: Learned how to perform simulations for weight reduction on Solidworks. Visited multiple casting vendors and closely observed the process of pattern development and casting.

Brief Description of working environment, expectations from the company: The working environment is good and the company is supportive. The mentors always took time out to guide us in our projects and clarify our doubts. The company strongly believes in implementation of the projects. Thus the entire focus of PS 2 at this company is to make sure that the project is implementable. All the support needed for the project is given. Company takes care of food and accommodation, and to travel to some extent.

Academic courses relevant to the project: Computer Aided Design, Machine Design and Drawing, Finite Element Method.

Name: Madhuri U (2016H1490207P)

Student Write-up

Short Summary of work done during PS-II: Worked on 'Testing lead time reduction in R&D for the incoming materials'

Tools used (Development tools - H/w, S/w): Excel, Minitab

Objectives of the project: 1. Lead time reduction from the existing 12 days 2. Analyzing the quality reports and recommending supplier for green channel procurement

Major Learning Outcomes: Application of supply chain concepts like lean, project management and six sigma concepts in project

Brief Description of working environment, expectations from the company: Pros: ABI is a company having a lot of scope to improve with a lot of good projects to work on, resistance to change or even to share data and work pressure.

Academic courses relevant to the project: Principles of Operations, Project Management, Total Quality Management.

*PS-II Station: Altair Engineering India Pvt. Ltd. - Software Division,
Bangalore*

Student

Name: Aditya Narayan (2014A4PS0343H)

Student Write-up

Short Summary of work done during PS-II: The prime work was software development. Hypermesh software that is used for computational analysis and preprocessing is the main product for which I was assigned a project. I was involved in development of optistruct- fatigue process manager development.

Tools used (Development tools - H/w, S/w): Hypermesh- optistruct- fatigue Process Manager

Objectives of the project: To develop a flow of UI for fatigue process manager.

Major Learning Outcomes: Learnt development of UI. Application of loops and basic structures for development.

Brief Description of working environment, expectations from the company: Altair has a very good environment overall. All the people are very welcoming and it is simply a welcoming place for everyone.

Academic courses relevant to the project: Computer Programming

Name: Varun Mahesh (2014A4PS0330P)

Student Write-up

Short Summary of work done during PS-II: The objective of this project was to build Contexts for the Certification Module of the Hyper Works suite. The purpose of this module is to certify whether a product is fit for use. In order to do so, this module should allow the user to discretize the model into multiple entities, apply stress/force methods on each of these entities, and run the simulation for these loads. The resultant simulation would show whether the entities have passed/failed user-defined safety criteria. This entire workflow should be executable through the contexts, which is a graphic pane on top of the Hyper Works window. These contexts were made in such a way that the workflow was intuitive for the user, using C++, Tcl/Tk and XML languages.

Tools used (Development tools - H/w, S/w): Languages such as Tcl/Tk, C++, and XML.

Objectives of the project: The objective of this project was to build Contexts for the Certification Module of the Hyper Works suite, which certifies whether a product is fit for use.

Major Learning Outcomes: Programming Languages such as Tcl/Tk, C++, XML. Experience of working in a corporate environment.

Brief Description of working environment, expectations from the company: Working hours is very flexible. Most employees whom I interacted with were friendly and accommodating, so it was a pleasant experience to work in Altair. They usually look for Mechanical Engineers who have a programming background to help them out with their development work. Even if a student is n't proficient at programming, he shall be taught basic stuff in the company itself. They also seemed to be short of employees, so there was a good chance to convert the internship into a full time job for most interns.

Academic courses relevant to the project: Computer Programming, Machine Design and Drawing

PS-II Station: Bajaj Auto, Aurangabad

Student

Name: Eaga Akhil (2013B1A40901G)

Student Write-up

Short Summary of work done during PS-II: Trip length Optimization of the contractual work men for time saving and fatigue reduction. Squeezing of export stores area by 20% by maintaining the previous loading capacity. Reorganization of two stores for new component loading in the existing stores. Facility planning of the Electric Drive and Transmission assembly for auto rickshaw. Productivity improvement of 4S CNG auto rickshaw assembly line through design changes and thus leading to man power reduction.

Tools used (Development tools - H/w, S/w): Microsoft Excel, Onshape.

Objectives of the project: Trip length optimization, Layout and Facility planning, Man power reduction.

Major Learning Outcomes: Production Planning and Control (PPC), Total Productive Maintenance (TPM), Performing ECRS on a Final Assembly Line.

Academic courses relevant to the project: PPC, SCM.

Name: Yash Haritwal (2014A4PS0318G)

Student Write-up

Short Summary of work done during PS-II: Established the build sequence for upcoming models. Their line balancing. Store layout designing to optimize the material flow at the production line.

Tools used (Development tools - H/w, S/w): Vis Mockup Team center, excel.

Objectives of the project: 1. DFA study of 4 wheeler 2. Streamlining the material flow.

Major Learning Outcomes: Learning on how the production line is modified for any upcoming model, material flow.

Academic courses relevant to the project: SCM, MDD

PS-II Station: Bajaj Auto, Pune

Student

Name: Elaprolu Siva Ram Ganesh (2014A4PS0348P)

Student Write-up

Short Summary of work done during PS-II: My project was on analyzing speed gear seizure phenomenon of 3 wheeler RE205 (4 stroke petrol engine) main shaft assembly. I first understand the function of main shaft assembly and parts & their contributed parameters to gear seizure. Then i prepared parameter check sheets at part level, main shaft assembly level and engine assembly level. I also prepared fault tree analysis (FTA) for this phenomenon and conducted stack analysis for axial clearance calculation. Later i was sent to Aurangabad for collecting information regarding my project at Sanjeev auto - main shaft assembly vendor of BAL, Aurangabad auto private limited - main shaft vendor of BAL and BAL Aurangabad. There i understand its production, inspection methods and location in engine. Then i studied detailed lubrication transmission and lubrication mechanisms in engine. Later daily monitoring of engine defects and main shaft assembly was done. If any defect related to gear seizure was found, it was analyzed deeply to find out the root cause and its elimination. As gear seizure phenomenon was rare, i was asked to identify present controls to eliminate such defect and identify gaps. Then a possible corrective action has to be identified to eliminate such gaps. So detailed main shaft manufacturing and its inspection controls, speed gears inspection controls and remaining child parts inspection controls has been identified along with its defect possibilities and their corrective actions. As of now based on the daily monitoring of defects, the suggested controls for the child parts have been taken and implemented. Some of the other controls for speed gears have been highlighted and going to be implemented in future.

Tools used (Development tools - H/w, S/w): ANSYS Design Modeler, Microsoft excels various measuring and inspection instruments.

Objectives of the project: To reduce the chances for future occurrence of speed gear seizure phenomenon on 3 wheeler RE205 (4 stroke petrol engine) main shaft assembly to maximum extent based on studied root causes.

Major Learning Outcomes: Working of IC engines, carburetor, brakes, clutches transmission and lubrication mechanisms in 3 wheelers. Study of different parameters of drawings. Processes of main shaft assembly, engine assembly and Vehicle assembly. Learning various measuring and inspection

instruments and their usage. Process flow in BAL Aurangabad, Sanjeev auto and Aurangabad auto private limited. Study of different engine and main shaft assembly defects & their causes. Process of defect analysis and its systematic presentation. Process of main shaft production, cross production and speed gears production from CNC blank stage.

Details of papers/patents: 3 wheeler RE205, RE145, RE236, and RE445 main shaft assembly drawings of BAL. Pre dispatch inspection (PDI), receiving inspection reports (RIR) and input, process and output (IPO) reports Bajaj vendors Sanjeev auto and Aurangabad Auto private limited.

Brief Description of working environment, expectations from the company: There are lot of practical things from different courses in our college that can be observed in Bajaj and their vendors. We can also observe the inter relationship of different courses during studying various assembly levels of engine. The people working at the assembly lines and repairs don't speak English and mostly speak in marati, so it is must to know some Hindi atleast to communicate regarding our doubts. But they are very supportive and you can learn lot from them regarding various causes of defects based on their experience. The mentors whom i have to meet at various plants are very busy most of the times, as they are from quality department. I have to spend most of time waiting for them to complete their work for discussing regarding my project progress and its doubts and sometimes need to stay after the completion of company time along with them. They will expect a lot from our work and also it should be presented in a way which must satisfy mentor and his bosses. But they are very friendly by clearly telling you what can be the possible modifications and suggestions for future project progress. Finally from the learning point of view, Bajaj is a very good company but require a little patience while working regarding your project.

Academic courses relevant to the project: Quality control & assurance, Production techniques 1 & 2, IC engines, Material science and engineering, Automotive vehicles and Kinematics and dynamics of machines

Name: Harshal Gupta (2014A4PS0380P)

Student Write-up

Short Summary of work done during PS-II: During PS-II, I worked as a trainee in Vehicle Assembly department at Chakan plant of Bajaj Auto. During that period my project focused on standardization of

conveyor - c of the department. This required me to work as an operator at line, as a manager of the line and also as an auditor of the line.

Tools used (Development tools - H/w, S/w): MS excel and PowerPoint.

Objectives of the project: Standardization of conveyor - c of vehicle assembly department.

Major Learning Outcomes: Lean practices, Toyota production system and kaizen ideology.

Brief Description of working environment, expectations from the company: Working details highly depends on the department and project mentor you are allotted in the company. For example, my working hours were during first shift for the duration being. And the work at production department can be exhausting but you can learn many things. Also, the company expects much excellence as we are from BITS. Also, it will help you in getting used to working environments and conditions you will deal with later in life.

Academic courses relevant to the project: Lean Manufacturing, Toyota Production system, supply chain management and production planning and control.

PS-II Station: Bharat Forge Ltd, Pune

Student

Name: Karwa Sagar Shaileshkumar (2016H1410043H)

Student Write-up

Short Summary of work done during PS-II: Outlined the operations involved in machining of forged crankshaft, with focused learning of the pin grinding process. Redesigned the tooling/parts in throw block of Pin Grinding machine as per the modified throw of new crankshaft model given by the customer. Incorporated Solid edge ST7 software for modeling, assembling, drafting and simulating CAD models for redesigning. Released the part and assembly drawings drawn using GD&T rules for manufacturing to the vendor. Performed FEA of a gear tooth used in tool set of a pin grinding machine.

Tools used (Development tools - H/w, S/w): Solidedge, Creo, Ansys, and Autocad

Objectives of the project: Modification in the design of tooling in Pin Grinding machine for a crankshaft having a distinct throw Correctly understand the operation of indexing and purpose of sub-parts Modify the shape and/or dimension of the sub parts based on visualization and calculations done using drafting tools Analyze the gear for failure against bending and pitting and ensure its competency in indexing the crankshaft.

Major Learning Outcomes: This project dealt with learning the process to be followed in order to successfully fulfill a new customer requirement in an industry with minimum cost to company. It involved investigating the sub-parts to be reconstructed in the sub assembly, modifying the shape and/or dimension of the sub parts based on visualization and calculations done using drafting tools such that DFMA guidelines are followed, reassembling them in CAD package proceeded by validation using simulations and final approval. Lastly, learnt to document the drawings by following GD&T standards.

Brief Description of working environment, expectations from the company: Bharat Forge has quite stringent rules for every employee, operator or intern working in the company. It gives high importance for training and development activities for its employees. It is a typical manufacturing organization running in three shifts where an employee is expected to work for 8 hours a day with minimum resources and maximum productivity.

Academic courses relevant to the project: Finite Element Method.

Name: Prachi Gajanan Nerikar (2016H1420116P)

Student Write-up

Short Summary of work done during PS-II: Worked on Industry 4.0 project, learned about Quality and Maintenance Systems, Using Pivot charts Machine learning techniques and Digital twin technology.

Tools used (Development tools - H/w, S/w): Excel, Python

Objectives of the project: To implement Industry 4.0 on PZS-1 line.

Major Learning Outcomes: Knowledge about machine learning techniques, Excel an Python. Exposure to industrial environment.

Brief Description of working environment, expectations from the company: Working environment was encouraging towards learning from your observation as well as from your mistakes. Excellent mentor.

Academic courses relevant to the project: Quality Control and Assurance, Mechatronics.

PS-II Station: CEG Limited, Jaipur

Student

Name: Madarapu Venkat Akhil (2016H1300046P)

Student Write-up

Short Summary of work done during PS-II: my internship is based on transportation engineering. it deals with designing the various components of highway.

Tools used (Development tools - H/w, S/w): Civil 3d.

Objectives of the project: Design economically and safely.

Major Learning Outcomes: How Exactly the Industry Operates.

Academic courses relevant to the project: Geometric Design Pavement Analysis and Design.

Name: Krishna Kanth L (2016H1300052P)

Student Write-up

Short Summary of work done during PS-II: The work mainly comprises of design and design review of the present ongoing projects in CEG. The design work mainly comprises of road furniture detailing and the Design review mainly comprises of Reviewing plan and profile drawings, drain drawings, miscellaneous drawings etc.

Tools used (Development tools - H/w, S/w): AutoCAD, AutoCAD civil 3D, and Excel.

Objectives of the project: The main objective of project is to review and comment on the drawings submitted by the client after reviewing them.

Major Learning Outcomes: Hands-on experience on live projects, expertise in design reviewing, learnt AutoCAD civil 3D.

Details of papers/patents: No paper/Patents has been done.

Brief Description of working environment, expectations from the company: Work environment is good, the people in CEG are very supportive, the amenities were also good. They are expecting that the person should know the basic softwares of civil engineering so that it will be helpful.

Academic courses relevant to the project: Highway Geometric design and Traffic, pavement failure and rehabilitation.

Name: Rahul Jain (2016H1430016H)

Student Write-up

Short Summary of work done during PS-II: Design of Steel Canopy, bowstring arch bridge and rcc control building.

Tools used (Development tools - H/w, S/w): Staad pro and excel.

Objectives of the project: To understand the design process for steel structures that comply with IS codes.

Major Learning Outcomes: IS and IRC codes, Design methodology & philosophy of rcc and steel structures and the role of structural engineer in complete execution of detailed design projects.

Brief Description of working environment, expectations from the company: It's not very open and healthy in the sense that problem solving discussions are not carried out as a team or even as individuals, they do not jewel with interns and are not bothered about progress of intern, instead they rely heavily on giving their work to intern (any work arbitrarily) and make them stay after office hours. The engineers don't have in depth knowledge of the projects they are designing. Having said all, if someone (intern) has decided to learn and do projects, then there is no hindrance. A PPO of 4.2 lakh is available to him/her most of the time. My expectation would be to have at least couple of engineers who are sound in the technical knowledge and let the interns do their projects instead of giving work in between arbitrarily due to lack of manpower.

Academic courses relevant to the project: Bridge engineering, Earthquake engineering, dynamics of structures, Plates and shells, Finite element analysis,

PS-II Station: Development Consultants Pvt. Ltd. (DCPL), Mumbai

Student

Name: Prakhar Pincha (2013B1A20602H)

Student Write-up

Short Summary of work done during PS-II: Quantity Estimation (From Architectural Drawings), Design of RCC-Beam (Trial & Error, using programmed Excel), Data Manipulation (Excel), Loads calculation for Design of Roof Truss (From Arch. Drawings), Design of weld connection and Making Report using STAAD PRO outputs, etc.

Tools used (Development tools - H/w, S/w): Excel, word, STAAD-PRO.

Objectives of the project: Analysis and Design of Power-Plant Structures.

Major Learning Outcomes: STAAD-PRO software.

Brief Description of working environment, expectations from the company: Good Environment.

Academic courses relevant to the project: R.C.C, Steel, Computer Application in Civil Engineering.

Name: Penmetcha Jayasheel Varma (2016H1430023H)

Student Write-up

Short Summary of work done during PS-II: The actual involvement in the real time projects made me aware of the practical difficulties that arise during construction in industrial sites. The codal provisions of R.C.C structures and limitations of codes in designing them were identified. SAP2000 is the one of the most popular structural engineering software for Analysis & Design of Industrial structures which was used for interpreting the results of structural elements like beam, column, plate, shell and their interactions. The basic principles and theoretical aspects of Design of RCC & Steel courses were implemented in live projects. The structures were also designed for dynamic cases like wind load and seismic load. Structures were generally modeled and designed in SAP2000. The structure was first modeled, then member properties and support conditions were assigned. The loads were applied on the structure in accordance with corresponding parts of IS 875 and IS 1893. The design parameters were

then set and the structure was analyzed. The members were designed using relevant excel spreadsheets. When any member of the structure fails or when the deflection is more than the allowable limit specified in the relevant code, the member properties were changed and the structure was analyzed again.

Tools used (Development tools - H/w, S/w): STAAD. Pro, SAP2000, Microsoft Excel.

Objectives of the project: Analysis and Design of structures.

Major Learning Outcomes: Modeling, Analyzing, Designing and Detailing of structures.

Brief Description of working environment, expectations from the company: Dynamic growth-oriented organization, aims at achieving continuous self-improvement through R&D, diversification, market studies, market development and team efforts with delegation of appropriate engineering staff.

Academic courses relevant to the project: Structural analysis, Design of Reinforced concrete structures, Design of steel structures.

PS-II Station: Divgi TorqTransfer Systems Pvt. Ltd, Shivare, Pune

Student

Name: Akshaykumar Patil (2016H1060129P)

Student Write-up

Short Summary of work done during PS-II: Calculation of Overall Equipment Effectiveness (OEE) and finding areas for improvement in OEE, Giving suggestions for improving OEE.

Tools used (Development tools - H/w, S/w): OEE, Lean Manufacturing, and Excel.

Objectives of the project: To Implement and Improve OEE at plant.

Major Learning Outcomes: OEE, Gear manufacturing process, Gear Inspection parameters.

Brief Description of working environment, expectations from the company: Working environment is good. Company operators, supervisors, in charge and management is very helpful.

Academic courses relevant to the project: Lean Manufacturing.

PS-II Station: Grasim Industries Ltd., Nagda

Student

Name: Abhishek Prashant (2014A1PS0475G)

Student Write-up

Short Summary of work done during PS-II: A Study of Multistage Flash Evaporators and Suggestions to improve their Efficiency. I was required to study the MSFEs operating in their Auxiliary Department-II.

Tools used (Development tools - H/w, S/w): Safety Shoes, Gas Masks.

Objectives of the project: To study MSFEs operating in Auxiliary Department-II.

Major Learning Outcomes: I gained insight into the working of a viscose manufacturing plant, how they reuse their spin bath for VSF production and bagging of glibber salt as byproduct which is extremely viable financially.

Brief Description of working environment, expectations from the company: The working environment is a bit hectic with expulsion of gases like hydrogen sulphide and carbon disulphide from various machines in our department. There is no specified place for trainees to work or ask their doubts as many of the employees are too busy to care about you. I was expecting the employees to be more straightforward and helpful instead of deferring help or directing us to higher-ups for advice who sent us to them in the first place, leading to us trainees running around in circles until we find someone who is willing to help.

Academic courses relevant to the project: Heat Transfer, Mass Transfer, Thermodynamics.

Name: M.S. Srinivass (2013A1PS0905H)

Student Write-up

Short Summary of work done during PS-II: The aim of the project is to study the exhaust system employed in the spinning machines 1, 2 and 3 of the Spinning division and to suggest changes or modifications if any to improve the existing system.

Tools used (Development tools - H/w, S/w): Hardware.

Objectives of the project: To study the exhaust system of spinning machines.

Major Learning Outcomes: Learnt how the industry functions and how exhaust systems work.

Brief Description of working environment, expectations from the company: A very nice working environment and lots to learn and understand.

Academic courses relevant to the project: Fluid Mechanics.

Name: Rahul Bonala (2013A1PS0484H)

Student Write-up

Short Summary of work done during PS-II: To calculate ton of refrigeration, i have to measure the inlet and outlet temperate of jacket water of every section, flow rates, pipe diameters etc.

Tools used (Development tools - H/w, S/w): Measurement Tools like Barometer, Thermometer, Etc.

Objectives of the project: To Calculate Ton of Refrigeration.

Major Learning Outcomes: Learnt About the Working Environment.

Academic courses relevant to the project: Mass Transfer, Heat Transfer.

PS-II Station: Grasim Industries, Pulp and Fibre Division, Mumbai

Student

Name: Ansh Thakur (2013B1A10234P)

Student Write-up

Short Summary of work done during PS-II: I had two projects: 1) to increase resource efficiency of Multistage Flash Evaporator 2) Turbine operation optimization for steam turbine. Both projects are in the field of Applied Data analytics in core engineering.

Tools used (Development tools - H/w, S/w): Matlab, Excel.

Objectives of the project: To predict fouling of the equipment and increase efficiency.

Major Learning Outcomes: Application of Advanced Data Analytics in core engineering problems.

Brief Description of working environment, expectations from the company: The mentor is very cool and helpful. The working environment and the food is very nice. However, you work alone on the project. You are not assigned to any team here. The mentor is very adjusting and understanding and gives you a project of your interest and since it is the R&D division, you can get projects in nearly every field to work on. Also, the station is good for chemical as well as mechanical students as the projects are related to both the fields.

Academic courses relevant to the project: Heat Transfer, Separation Process, Fluid Mechanics, Thermodynamics.

PS-II Station: Hindustan Unilever Research Centre, Bangalore

Student

Name: Aishwarya Sharma (2013B2A40416P)

Student Write-up

Short Summary of work done during PS-II: Hydrogen Peroxide is used in various FMCG products as a bleaching agent, disinfectant, oxidizing agent, etc. The problem that lies in this case is its stability. Hydrogen peroxide, over a period, breaks down into water and oxygen thereby losing its property. Through this project, my aim is to study that in what acidic conditions containing surfactants, in the presence of which sequestrates and at what quantity of the sequestrant is hydrogen peroxide most stable. During the experiment, mild acidic solutions containing certain surfactants and hydrogen peroxide (4%) will be prepared with varying concentrations of different. The concentration of hydrogen peroxide in the above prepared solutions will then be evaluated over a period of 12 weeks. Initially the concentration of H₂O₂ solution will be accessed via titrations with potassium permanganate. Using this, acidic solutions of pH 2, 3, 4 and 5 containing certain surfactants and 4% hydrogen peroxide will be prepared in the presence of sequestrates like EDTA, DTPA, Request 2010, 3-hydroxy-1,2-dimethyl pyridine, Physic acid and, 2-picolinic acid with concentrations varying from 0 ppm (stock) to 500 ppm. The above prepared solutions will then be analyzed for the concentration of H₂O₂ after hot, dry condition storage over a period of 12 weeks using suitable spectrophotometric methods.

Tools used (Development tools - H/w, S/w): Spectrophotometer, Burettes, Hot Air Oven, Water Bath, and Stirrer.

Objectives of the project: Study of stability of Hydrogen peroxide (H₂O₂) (4%) in mild acidic conditions containing surfactants in presence of sequestrant.

Major Learning Outcomes: Chemistry and conditions necessary for the stabilization of H₂O₂ in acidic solutions and in the presence of different sequestrates and surfactants. Different analytical methods such as iodometric, permanganate titrations, UV spectrophotometric method using molybdate and ferrous salts for determination of H₂O₂ when in the presence of inhibiting oxidizing agents.

Brief Description of working environment, expectations from the company: HURC tries best to promote innovation via research and development. At times of confusion, the people readily help the

trainees. But when it comes to the projects, HURC doesn't live up to the expectation since most of the projects entail monotonous work and give very little scope for innovation and imagination.

Academic courses relevant to the project: IMA, Inorganic Chemistry -1, 2, 3; physical chemistry -1, 3

Name: Ajay Abraham (2014A1PS0625G)

Student Write-up

Short Summary of work done during PS-II: I was working on the study of drying process in a fluidized bed drying and its modelling. I have done lots of experiments on drying in fluidized bed dryer and tray dryer, which was so informative. Some parameters of drying were studied and the effect of drying conditions on the drying kinetics was studied.

Tools used (Development tools - H/w, S/w): Matlab, Excel.

Objectives of the project: Analysing the drying kinetics and modelling of dryer parameter.

Major Learning Outcomes: Understanding of drying, Parameters involved in fluidized bed drying and its modeling.

Brief Description of working environment, expectations from the company: Depending on the amount of work.

Academic courses relevant to the project: Heat transfer, Numerical methods, Fluid Mechanics, Kinetics.

Name: Bairi Sai Vasista (2016H1010018P)

Student Write-up

Short Summary of work done during PS-II: The overall objective was to study the effect of different dryer and their parameters effect on drying kinetics and particle size distribution for tea dhool material. We worked with different dryers and tried to understand their working mechanism.

Tools used (Development tools - H/w, S/w): Microsoft Excel.

Objectives of the project: To determine the effect of different dryer types and their parameters on drying kinetics and particle size distribution.

Major Learning Outcomes: In depth learning regarding the manufacturing process involved for tea product, understanding the dryer effect on particle size distribution.

Brief Description of working environment, expectations from the company: Working environment is too good, Research scientist and other employees are helpful and provide sufficient insight knowledge regarding the project on which you are working.

Academic courses relevant to the project: Yes

Name: Karan Khubdikar (2014A1PS0647H)

Student Write-up

Short Summary of work done during PS-II: I have done two projects. 1) In the first project, I did quantification of zinc pyrithione (ZPT), which is an antifungal active using a spectrophotometric based tool. The major challenge was to quantify ZPT using simple and quick estimation tool in order to replace the already existing sophisticated techniques like HPLC. 2) In the second project, I did screening of different sequestrants for inhibiting the Octopi ox (OCT, another antifungal active)-Fe(III) complex which is formed when OCT binds with Fe(III) ions present as impurities in the raw materials which inhibits the functional efficacy of OCT. Here, I had to see the effect of addition of different sequestrants and find out which one of these sequestrants proves to be the best to and leads to stabilization of OCT.

Tools used (Development tools - H/w, S/w): UV-Vis spectrometer, Spectroquant, FTIR, XRD, TGA, Tint meter.

Objectives of the project: Quantification of Zinc Pyrithione and Interaction studies of Octopirox.

Major Learning Outcomes: Learnt to use various analytical tools with hands-on experience of the necessary tools. Also learnt about the chemistry of anti-dandruff actives used in the shampoos.

Brief Description of working environment, expectations from the company: The company demands hardworking and diligent students who can provide and support in the research work of various

products of the company and help in upbringng the efficacy of the product in whichever way possible. Intuitive thinking with the ability to question and understand the working of the products is required.

Academic courses relevant to the project: Material Science, Material Characterization, Chemistry, Solid State Chemistry.

Name: Khantil Buch (2014A1PS0315G)

Student Write-up

Short Summary of work done during PS-II: Disposal of Laundry wastewater is a major issue. The residual surfactants present in the waste water make it a hazard to directly dispose of in sewage. It is necessary to treat such wastewater before disposal. In this project, an attempt has been made to study adsorption of this residual surfactant on Aluminium Chlorohydrate (coagulant) via sweep flocculation mechanism. This is to study and regulate the change in residual surfactant concentration as per the requirement of the properties of the treated water. Effects of surfactant type and concentration due to changing pH, Turbidity of the solution, etc. have been studied. Hyamine titration and UV spectrophotometry have been used as techniques to measure the residual surfactant concentration.

Tools used (Development tools - H/w, S/w): MS office tools, pH meter, titration equipment, turbid meter, UV-spectrophotometer.

Objectives of the project: Mechanistic understanding for designing selective adsorption of organic matters via flocculation.

Major Learning Outcomes: Lab operations and lab safety Exposure to experimental research methodology Chemical handling Adsorption separation Surfactant chemistry Detergent chemistry and micelle formation Hyamine titration technique Excel statistical tools for data analytics.

Brief Description of working environment, expectations from the company: The company is pretty strict about safety procedures and rules. The overall working environment of the company is pretty relaxed. The project mentor leads the project and is very helpful. Being repetitive lab oriented work, the assignments get a little boring as the project progresses but that has to be expected for any research work. There is a gym in the company campus, available for minimal charges. At the end of the

internship, you will know how work is done in an MNC, how to carry your project at a research based firm, develop presentation skills and understand the core concepts of the project that you have been assigned to.

Academic courses relevant to the project: Separation processes, Engineering Chemistry, Chemical Process Calculations, Mass transfer, Chemical Engineering Lab 1 and 2.

Name: Krutarth Kamani (2014A1PS0570H)

Student Write-up

Short Summary of work done during PS-II: Understanding and modifying the amount of dissolved oxygen content present in water. Dissolved Oxygen (DO) is the amount of gaseous oxygen dissolved in water. It can get dissolved in water with the help of direct absorption from atmosphere. Dissolved oxygen depends on various factors of solvent such as pH, alkalinity, hardness of water, temperature and pressure. Out of these parameters, temperature and pressure are the most important factors and are the main concentration of this study. Effect of both the parameters can be studied by theoretical modeling as well as through experiment. During Experiments, for measuring the amount of DO in water Winkler method is used. By comparing the values obtained by both methods, one can check validity of the given model and hence can be used in further study for predicting the values at temperature and pressure at which experiments are practically infeasible.

Tools used (Development tools - H/w, S/w): Titration, magnetic stirrer.

Objectives of the project: increase DO content in water.

Major Learning Outcomes: preparing Experimental setup, accuracy of experiments, analyzing data.

Brief Description of working environment, expectations from the company: Projects were allotted after giving a lot of thought by mentors. Mentors are very helpful and always ready to help and solve doubts.

Academic courses relevant to the project: Environmental Process Control, Mass transfer.

Name: M. Disesh (2014A1PS0450H)

Student Write-up

Short Summary of work done during PS-II: Beta-carotene and chlorophyll are pigments present in oils which give them their characteristic colors. Bleaching and deodorization are techniques generally employed to reduce the concentration of these pigments. Color reduction is generally done in industries to make the oil look more pure and desirable. In this project, different separation process parameters, both intrinsic and extrinsic are varied to get the best conditions from an economic and production point of view. Some of the parameters include temperature, pressure, type of bleaching agent and the dosage of the bleaching agent. Different techniques are implemented in the pre- processing and the post treatment of the oil, to see which method gives the best result.

Tools used (Development tools - H/w, S/w): UV - spectroscopy, Lovibond tint meter.

Objectives of the project: To optimize the industrial bleaching parameters for the given oil.

Major Learning Outcomes: Mass transfer principles and Factorial designing of experiments.

Brief Description of working environment, expectations from the company: Very relaxed and conducive environment for learning in the organization. Company expectations - To take complete leverage of the facilities provided and improve one's understanding of the subject, and in turn help the company's projects.

Academic courses relevant to the project: Mass transfer, Numerical Simulation, Basic Thermodynamics.

Name: Namrata Verma (2014A1PS0528H)

Student Write-up

Short Summary of work done during PS-II: Studied the cleaning action of the foam through foam theology. Foam-wall interaction which frictional force affects the shearing of the foam and the spreading action. This behavior affects the cleaning action of the foam. Foam properties like surface tension, bubble size, liquid fraction may bring in the changes in the flow theology and hence needed to be studied. Various foam parameters were changed and studied to see how it's affecting the foam- wall interaction to optimize cleaning.

Tools used (Development tools - H/w, S/w): Rheometer, Dynamic Foam Analyzer, Surface Tensiometer, and Self made setup.

Objectives of the project: To optimize the cleaning action of the foam.

Major Learning Outcomes: To analyze the theoretical data and building up our own experimental setup. Hands of experience on Rheometer, dynamic foam analyzer.

Brief Description of working environment, expectations from the company: A well planned experimental setup. Supporting and enthusiastic employees willing to help over the internship.

Academic courses relevant to the project: Colloidal and surface chemistry.

Name: Sakshi Satyanand (2013B1A10513H)

Student Write-up

Short Summary of work done during PS-II: Understanding the binding interaction in metal chelators via quantum mechanical computations.

Tools used (Development tools - H/w, S/w): High-end computing system, Turbo mole.

Objectives of the project: To predict the stability of metal chelators using quantum mechanical calculations.

Major Learning Outcomes: Basics of quantum chemistry, coordination chemistry, thermodynamics.

Brief Description of working environment, expectations from the company: Excellent working environment with enthusiastic and supportive people.

Academic courses relevant to the project: Biophysics, Bimolecular modelling, Engineering Chemistry.

Name: Shivang Dahake (2014A1PS0653G)

Student Write-up

Short Summary of work done during PS-II: I worked for the homecare department in lab 10 of HUL. My broad research area was foam originating from laundry detergents. This project work was undertaken in the supervision of M/s Sarmistha Biswas by from the Homecare department. It included suggesting a new sub-attribute viz. the rate of lather generation, as a new foam assessment technique. Since, consumer habits vary a lot across India, and the perception of cleanliness is closely associated with the amount of foam a soap/detergent generates, it is necessary to study foam and its various applications. The new method with I suggested was tested on for foam-boost and anti-foaming agents along with its applications on soil based systems. All this was done in alignment with the results of the consumer studies.

Tools used (Development tools - H/w, S/w): Excel: Statistical tools-f test and t-test, sample size calculations, best fit etc.

Objectives of the project: Establish and validate the robustness of new foam measurement techniques to study the foamability of laundry surfactants.

Major Learning Outcomes: Statistical analysis to check for significant difference, Dynamic Surface Tension measurement, mechanism of antifoam and foam boost.

Brief Description of working environment, expectations from the company: The administration was quite supportive in helping us settle in Bangalore. The projects were quite thought out and meaningful for our learning experience. We were explained about what we were doing and why the allotted project was being carried out, and in turn they expected us to bring in our ideas through our understanding. But one drawback was that the projects were chemistry based rather than core chemical which diminished my interest a little bit and there was a lack of prior planning in organizing the final presentations on Unilever's part. But, we got to learn a lot overall, through our projects as well as through the projects of other interns and our mentors through various discussions that we had over time. In the end, I feel I know a lot more about surfactant chemistry, and the detergent industry as a whole as compared to what I knew when I began the internship.

Academic courses relevant to the project: Engineering Chemistry, Chemical Process Calculations.

Name: Suyash Gairola (2014A1PS0674P)

Student Write-up

Short Summary of work done during PS-II: Oil tolerance of foams was studied in order to find the best tolerant mixture and an attempt was made to investigate the reason behind it. Three binary surfactant mixtures were used and their interaction with an oil mixture was studied. A standard model in literature used to characterize antifoaming was selected and initially the interaction was studied on the basis of the model. The model isn't self sufficient to explain the antifoaming and only incorporates thermodynamics of the process, so some parameters were studied further so as to bring the kinetic aspect of antifoaming in the study. The kinetic parameters as opposed to the thermodynamic model which showed the extent of antifoaming gave us insight on the rate of antifoaming. Since capturing the kinetics wasn't a standard procedure, so new experiments were designed to study parameters like rate of oil spreading, rate of foam drainage via studying film drainage, etc. Further the thermodynamic model was correlated with the kinetic parameters studied to cover the shortcomings of the model. Finally, the data was correlated with foam tests done and the best performing mixture was explained on basis of the thermodynamics and kinetics of antifoaming.

Tools used (Development tools - H/w, S/w): Foam Generator, Force Tensiometer, Spinning Drop Tensiometer, Bubble Tensiometer, Rheometer and Spectrophotometer.

Objectives of the project: Characterization oil tolerance of foams via studying interaction of surfactants and oils.

Major Learning Outcomes: 1) ESB model isn't self sufficient to explain antifoaming. 2) Kinetics is a very important parameter while explaining antifoaming, as thermodynamic feasibility will not always ensure good antifoaming action. 3) Thin film stability is highly dependent on elasticity of the film. 4) Rate of oil spreading drastically affects antifoaming.

Brief Description of working environment, expectations from the company: The work at HURC, Bangalore is mainly focused on homecare products, so the allotment will be in the fields: Household care, Laundry and water management. All the work done revolves around surfactants, so the majority projects will be around applications of surfactants in these fields. The work is completely lab oriented, so experimental proficiency is required. The company is very strict about safety and it is rather a culture here. The place is full of scientists working in their respective fields for a long time, so the growing opportunity is really good here. The projects are all research and development oriented and hence the outcome of the projects is unknown. In the entire place provides a fair opportunity to learn and make an impact.

Academic courses relevant to the project: General Chemistry, Engineering Chemistry, Fluid Mechanics, Chemical Process Calculations and Wave Optics.

Name: T Madhav Narayan Bhat (2013B5A80536H)

Student Write-up

Short Summary of work done during PS-II: My work involved converting existing devices into so called "smart" devices. This involved replacing the control circuit present in them with a embedded systems such the Raspberry Pi. Using the Pi, the device can collect data and send it to a cloud server through the internet. Further, an App on a Smartphone can communicate with the cloud server which in turn can send data back to the device.

Tools used (Development tools - H/w, S/w): Raspberry Pi, Arduino Nano, H-Bridge, MOSFET, Python, MATLAB, and Thing Speak.

Objectives of the project: Microelectronic circuits, Digital Design, Computer Programming, Electronic Devices.

Major Learning Outcomes: Learned the interaction between hardware and software, learned how to code GUI, learned how to create and modify electronic circuits.

Brief Description of working environment, expectations from the company: As the only intern with electronics background in the entire place, I was initially a little skeptical of the work that might be given to me. But when I was contacted by my mentor on what was expected of me, I got very much relieved in knowing that I would not only work on electronic hardware (which was background) but also create programs to control them (programming being my primary interest and the profile I had gotten placed in through campus placements). Once I joined the company as an intern I understood just how different a work culture they have. I've had previous experience with research institutes (such as DRDO) but none of them displayed such a friendly yet productive and progressive environment as I did in HURC. I was genuinely shocked at how well the interns are treated here. I people I interacted with were not just humble and approachable, they were brilliant and motivated and very eager to work with us interns. Even the highest level managers in the company treated us with respect and helped us whenever we asked. Suffice to say, the experience I've had in last six months was one of the most productive yet enjoyable and fulfilling I've ever had working on a project.

Academic courses relevant to the project: Microelectronic circuits, Digital Design, Computer Programming, Electronic Devices.

Name: Tanaya Unhale (2013B1A10704G)

Student Write-up

Short Summary of work done during PS-II: My project was based on producing biodegradable films from zein, a corn-derived protein. Spectroscopic studies were carried out to establish the material properties of zein. A change in the protein secondary structures due to the presence of plasticizer was also analysed. Films were made from zein mixtures, and compositional analysis was carried out for the same. Rheological characterization for zein mixtures was done as well. Finally, surface morphology of the films was observed by SEM.

Tools used (Development tools - H/w, S/w): CD Spectroscopy, FTIR, SEM, Rheometer, Spin Coater.

Objectives of the project: To produce biodegradable packaging material using zein as a sustainable raw material.

Major Learning Outcomes: Commercial zein properties could be benchmarked against that of analytical grade zein.

Brief Description of working environment, expectations from the company: The working environment is quite energetic. All the employees are generally enthusiastic to take up meaningful discussions. New ideas are well received and creativity is encouraged.

Academic courses relevant to the project: Biochemistry, Polymers, Organic Chemistry, Fluid Mechanics, Instrumental Methods of Analytics, Biophysics.

Name: Videhi Shah (2014A1PS0534P)

Student Write-up

Short Summary of work done during PS-II: Work involved characterization of micelle structure, mapping of rheological properties of surfactant mixes and development of a data-driven model to predict viscosity.

Tools used (Development tools - H/w, S/w): Rheometer, Fluorimeter, Zeta-Sizer.

Objectives of the project: Mapping of rheological properties of surfactant mixes for various home care applications.

Major Learning Outcomes: Usage of tools such as Fluorimeter, Rheometer & Zeta-Sizer; Understanding of micelle micro-structure, micelle formation & phase transition.

Details of papers/patents: Articles on Research Gate, Science Direct and Internal Unilever Reports

Brief Description of working environment, expectations from the company: Good work environment, people expect results so kind of hectic. Maintaining discipline is of key importance.

Academic courses relevant to the project: Engineering Chemistry, Chemical Reaction Kinetics, Surface Chemistry, Colloid Sciences.

Name: Vinayak Pathak (2014A1PS0549P)

Student Write-up

Short Summary of work done during PS-II: My project involved biological modelling of skin pigment. The exact structure of the pigment is not known due to various barriers in biophysical characterization such as amorphous nature and broad band absorption in UV visible spectrum. Owing to this and in order to supplement the experimental work QM calculations was carried out on licensed software. The pigment was modeled as linear homo polymer and finally the UV- vis spectra was calculated using Time Dependent Density Functional, the result was in agreement with the literature obtained values.

Tools used (Development tools - H/w, S/w): High End Computer with TURBOMOL as software.

Objectives of the project: In-silicon modelling of skin pigment and validating it with experiments and available literature.

Major Learning Outcomes: Learnt the basics of computational chemistry and QM/MM modeling.

Brief Description of working environment, expectations from the company: The Company provides extremely amiable working environment. The intern coordination from the company side was commendable as they kept up with trivial requirements of the students from allotment of mentors, to finding of accommodation, providing gym facilities. The scientists are extremely knowledgeable, although most of the work is concentrated on their consumer products so one may or may not like the experiments involved. The work becomes redundant and the mentor interaction is not so frequent for some of them. One has to make sure from his side that s/he is interacting regularly, and putting constant effort to learn something new rather than just carrying out only whatever is told. Overall experience will be fruitful for the trainees.

Academic courses relevant to the project: Computational Chemistry, Computational Biology, Quantum Mechanics.

PS-II Station: IFB Home Appliances Division, Verna

Student

Name: Dhivya N (2016H1400040G)

Student Write-up

Short Summary of work done during PS-II: Design, coding and testing for incorporating Solar Assist feature in the washing machines.

Tools used (Development tools - H/w, S/w): CS+, Spyder.

Objectives of the project: Reduce energy consumption by reducing the use of internal heater in the washing machines.

Major Learning Outcomes: Working on different IDEs and microcontrollers.

Brief Description of working environment, expectations from the company: Good working environment, scope to learn a lot of stuffs being a fresher, support and guidance depends on the team and the mentor assigned.

Academic courses relevant to the project: Embedded Systems Design.

Name: Premchand Samantoroy (2016H1420111P)

Student Write-up

Short Summary of work done during PS-II: A Project on "Assembly Line Balancing of Front Loader Washing Machine" was assigned to me at IFB Industries, Goa. In which i found out all the Non Value added activities of each work station by elemental Time Study. Then worked on Redistribution of Work, Work Content Reduction and Man Power Optimization to reduce the Takt time to 12 sec. I also worked on Inventory Management, tried to implement E-Kanban at IFB Industries, Goa. Took a trial for the same. Along with this, worked on Lean Implementation, 5S, Automation in the line, Material Handling Improvement.

Tools used (Development tools - H/w, S/w): Avix Software

Objectives of the project: To Reduce the Takt time of Front Loader Washing Machine line to 12 sec.

Major Learning Outcomes: Man Power and Inventory Management.

Academic courses relevant to the project: Toyota Production Systems, Flexible Manufacturing System.

Name: Makrand M Hatwalne (2016H1060122P)

Student Write-up

Short Summary of work done during PS-II: New Product Development.

Tools used (Development tools - H/w, S/w): Pro-e, Ansys.

Objectives of the project: Reduce wash cycle time.

Major Learning Outcomes: Learnt about product design.

Academic courses relevant to the project: Product Design, CFD, FEM, MDOF Vibrations, Multi-body dynamics, CAD, Advanced composites, Advanced strength of materials.

PS-II Station: IFB Industries, Goa

Student

Name: Dhruv Patel (2016H1410045H)

Student Write-up

Short Summary of work done during PS-II: Design and Development of displacement of oscillation group of vertical axis washing machine. Optimizing dynamics by CFD analysis of liquid balancer of vertical axis washing machine. Build a mathematical model for the vertical axis washing machine. Benchmark various parameters of displacement of oscillation group, noise and vibration.

Tools used (Development tools - H/w, S/w): Creo, SIMATIC SCADA Systems.

Objectives of the project: Capacity Enhancement (Drum volume) by optimizing dynamics of vertical axis Washing Machine.

Major Learning Outcomes: 1. How to find out objective of the projects. 2. How to work in professional environment. 3. How much important is your presentation skills. 4. How to figure out the problems face during working on your project.

Details of papers/patents: S. Bae, J. M. Lee, Y. J. Leekang, et al., Dynamic analysis of an automatic washing machine with a hydraulic balancer, *Journal of Sound and Vibration* 257 (1) (2002)318.2. H. W. Chen and Q. J. Zhang et al., Stability analyses of a vertical axis automatic washing machine without balancer, *Journal of Sound and Vibration*, 329 (11) (2010) 2177-2192.3. Hai-Wei Chen, Qiu-Ju Zhang, Sheng-Yao Fan, et al., Study on steady-state response of a vertical axis automatic washing machine with a hydraulic balancer using a new approach and a method for getting a smaller deflection angle, *Journal of Sound and Vibration* 330 (2011) 2017 2030.4. Hai-Wei Chen, Qiu-Ju Zhang, et al., Stability analyses of a vertical axis automatic washing machine with a hydraulic balancer, *Mechanism and Machine Theory* 46 (2011) 910-926.5. A. Agnani, F. Cannella, M. Martarelli, G. Merloni and E. P. Tomasini, et al., Dynamic Characterization of a Washing Machine: Numerical Multi-body Analysis and Experimental Validation. 6. Baris Can Yalin, Haluk Erol, et al., Semi active Vibration Control for Horizontal Axis Washing Machine, *Shock and Vibration* (2015).7. C. H. Jung, C. S. Kim and Y. H. Choi, A dynamic model and numerical study on the liquid balancer used in an automatic washing machine, *Journal of Mechanical Science and Technology*, 22 (2008) 1843-852.8. Z. W. Wang and H. M. Wu, Dynamic analysis and simulation of a top loaded washing machine, *China Mechanical Engineering*, 13 (23) (2002) 2033-2035.9. M. S. Kim, S. S.

Shin and W. I. Lee, A new VOF-based numerical scheme for the simulation of fluid flow with free surface (1), Transactions of the KSME B, 24 (12) (2000) 1555-1569.10. D. C. Conrad, The Fundamentals of Automatic Washing Machine Design Based upon Dynamic Constraints, PhD Thesis, Purdue University, 1994.

Brief Description of working environment, expectations from the company: Working Environment of company is good but different compared to other Tier-1 Companies. R&D should be more developed compared to current situation. Development tools - H/w, S/w Tools and Facilities are not up to expectation in R&D. Stipend is less compared to other PS station, it should be revised through PS division. Stipend should not be deduct for genuine leave like placements and other things.

Academic courses relevant to the project: Computer Aided Analysis and Design, Advanced Mathematics, Advanced Composite, Computational Fluid Dynamics, Dynamics and Vibration, Multi-Body Dynamics, Finite Element method.

Name: Hardik Patel (2016H1410042H)

Student Write-up

Short Summary of work done during PS-II: The project work was started from determining the key aspects for the project are: 1. Improve mechanical action in front-loaders. 2. Wash cycle time reduction. 3. Increasing clothes motion (tumbling & rubbing).The baffle design concepts were developed, prototyped and tested for the operating parameters like washing, rinsing and spinning. Experimental results were compared with simulation results and finalized the best design for the next products.

Tools used (Development tools - H/w, S/w): I used my own hardware and software. Nothing was provided to me from the PS station.

Objectives of the project: Baffle Design and Mechanical Action optimization for front load washing machine.

Major Learning Outcomes: Key learning outcomes are: 1. CAD tools usage. 2. The process of new product development with manufacturability. 3. CFD analysis of the product.

Brief Description of working environment, expectations from the company: I have done my project in R & D department. It is good place to work and learn product development. I faced disrespectful and arrogant behavior from HR department. Before starting internship all things should be cleared because after joining they will try to deduct your stipend by applying employ rules but not giving the facilities as par employs.

Academic courses relevant to the project: 1. Computational Fluid Dynamic 2. Product Design 3. Finite Element Method 4. Computer Aided Analysis and Design 5. Dynamics and Vibrations.

Name: Nishit Rajyaguru (2016H1410093P)

Student Write-up

Short Summary of work done during PS-II: Concept Development of IFB Dual wash. Development of initial design for Mini Detachable front loader washing machine with 4 kg capacity. Project includes 1) Deciding the need of product 2) Competitor product study 3) Finalizing initial dimensions of mech components 4) CAD modeling.

Tools used (Development tools - H/w, S/w): Pro Engineer.

Objectives of the project: 1) Deciding the need of product 2) Competitor product study 3) Finalizing initial dimensions of mech components 4) CAD modeling.

Major Learning Outcomes: Became Proficient in Complex CAD modeling.

Brief Description of working environment, expectations from the company: Working environment in R&D is good. Actually it depends on mentor you are allocated to. Workplace is decent. Ideas will be heard and appreciated. They will cut money from stipend if you take leave with/without informing them. Food at company is average.

Academic courses relevant to the project: Computer Aided Analysis and Design, Strength of material.

PS-II Station: Ingersoll Rand India Ltd, Bangalore

Student

Name: Vikas Vikraman Pulinkuzhi (2016H1480056H)

Student Write-up

Short Summary of work done during PS-II: I have been involved in new product development projects. One of the projects included me to do technological assessment of the system through running simulations on Matlab (mathematical modeling was already done) with various conditions. Performed a DOE and sensitivity analysis. My second project was about assisting in building a business case and performing initial technical calculation for a new concept/product. I was also involved in conducting a thermal survey within the organization. This work included managing data from the survey and also included making a heat map of the domain out of the survey data.

Tools used (Development tools - H/w, S/w): MATLAB, TRACE (similar to energy plus), EXCEL (VBA), UP2 (Similar to TRNSYS), EES.

Objectives of the project: To analyze the technological and economical aspect of a new product.

Major Learning Outcomes: Knowledge gained in the area of mathematical modeling, performing DOE, learning new software and interpersonal skills required in company.

Brief Description of working environment, expectations from the company: Good work culture with very helpful coworkers. But you need to take the initiative and talk to others and make a good rapport. Location is very accessible. Facilities such as cafeteria, pantry, and gym are good. On the down side, there is no laboratory or experimental setup for us to get hands on experience.

Academic courses relevant to the project: HVAC, Refrigeration and air conditioning, Thermal equipment design, Numerical Methods, Convection Heat Transfer.

PS-II Station: John F Welch Technology Center (GE), Bangalore

Student

Name: Sidhant kumar Singh (2013B5A40514G)

Student Write-up

Short Summary of work done during PS-II: Thermal engineering and CFD.

Tools used (Development tools - H/w, S/w): Ansys Fluent, ICEM CFD, Isight, office.

Objectives of the project: Study of flow in furnace.

Major Learning Outcomes: Thermal engineering and CFD.

Brief Description of working environment, expectations from the company: Very productive and supportive.

Academic courses relevant to the project: Thermodynamics, Fluid mechanics, Gas Dynamics and Heat transfer.

PS-II Station: LEA Associates, Delhi

Student

Name: Anirban Deshmukh (2016H1440033P)

Student Write-up

Short Summary of work done during PS-II: My project consists of few out of many aspects of highway engineering. This project depends on the rules and guidance of IRC codes and CWC zone reports and takes the help of software like ArcGIS to progress. Main factors associated with this project are obtaining watershed area using the help of proper DEM which is then processed in ArcGIS to obtain the streams, and watershed areas. The characteristic values of obtained watershed, rainfall data and zonal characteristics is then used to obtain design discharge for a given location of interest. Then either LiDAR survey data or Google Earth elevation data is used to know the longitudinal section of streams (bed channel) and cross sections near the bridge location which is used to obtain Highest Flood Level (HFL) for a desired bridge span length.

Tools used (Development tools - H/w, S/w): HEC-HMS, HEC-RAS, ArcGIS.

Objectives of the project: Complete hydro-logical analysis for bridges/culverts.

Major Learning Outcomes: Hydrological solution for highway engineering.

Brief Description of working environment, expectations from the company: I had an amazing experience at LEA Associates South Asia Pvt. Ltd. (LASA), New Delhi. It is a great opportunity in industrial learning and professional development. I was provided with an opportunity to learn from senior people and professionals who guided me through this training period.

Academic courses relevant to the project: Water Resources Planning and Management.

Name: Chirag Garg (2016H1440031P)

Student Write-up

Short Summary of work done during PS-II: The internship program offered at LEA Associates South Asia Pvt. Ltd. (LASA) includes the Highway design of various National and State Highways. The current focus of LASA is on the Bharatmala Projects of National Highway Authority of India (NHAI) in the state of

Madhya Pradesh and Bihar. Over the course of training, I have been involved in DPR preparation of Vidisha-Mehlua section of New NH-346 at Madhya Pradesh (73580). After the finalizing of alignment by Regional Office (NHAI) at Bhopal we have been working on the Land Acquisition and Public Consultation part. In the meantime, I have learnt some useful software of Autodesk Extensions (Infraworks, Plex. Each & Vehicle Tracking) and Mx-Road.

Tools used (Development tools - H/w, S/w): MxRoad, Autodesk Infraworks, and Vehicle Tracking.

Objectives of the project: To prepare detailed Project Report of Highways.

Brief Description of working environment, expectations from the company: Working environment of our company is really healthy. Juniors and Serious share very friendly relation and helping each other is difficult situations and taking blame of junior's mistakes is somewhat i seen new.

Name: Kshitij Neeraj Doshi (2016H1300053P)

Student Write-up

Short Summary of work done during PS-II: Me as a trainee learned few out of many aspects of highway engineering. This project started with the few reading assignments like IRC codes and some reports. Later transition length table was prepared which is based on the 3 formulae and max. Length out of 3 formulae is selected. I visited site for conducting due diligence survey and later supporting docs for reports were made at the office. Then road furniture (Road studs, road delineators, single chevron sign) schedule and quantity was found out the stretch of Biora-Dewas. Introduction to software Autodesk Civil 3D has also been covered in this project. I learned entirely new software called Autodesk Infraworks 360. I have also done a little bit of Land Acquisition work (Site Work).

Tools used (Development tools - H/w, S/w): Autodesk Autocad, Autodesk Civil 3D, and Autodesk Infraworks 360.

Objectives of the project: Learning Highway Design and related things.

Major Learning Outcomes: Signage's Schedule, Land Acquisition 3A, Preliminary designing of road in Autodesk Infraworks and Introduction to Civil 3D.

Brief Description of working environment, expectations from the company: Overall working environment of company is fine.

Academic courses relevant to the project: Highway Geometric Design.

Name: Manasvi Srivastava (2016K1430044P)

Student Write-up

Short Summary of work done during PS-II: Initially design check of various bridge components (mostly bearings and retaining walls) was assigned to me. Thereafter I was given to design longitudinal and cross girders, deck slab and bearing loads and displacements of a 40m span bridge. STAAD Pro was used for the analysis part of it. Later I designed one skew wall type abutment with pile foundation using Excel sheet and STAAD. After that I've been working on modeling of bridges using Revit.

Tools used (Development tools - H/w, S/w): Excel sheets, STAAD Pro, AutoCAD, and Revit.

Objectives of the project: Designing various bridge components.

Major Learning Outcomes: Design check of bearings, Design of Abutment, Deck Slab, Longitudinal and cross girders, Bearing loads and displacement, Revit.

Brief Description of working environment, expectations from the company: The environment here was quite cordial and apt for a trainee to develop its potential in the field of Structural designing. Throughout the PS session, all the seniors were extremely helpful. The design procedure was explained minutely. I was constantly motivated to bring the best out of me and learn concepts efficiently.

Academic courses relevant to the project: Bridge Engineering, Advanced Concrete Structures, Earthquake Engineering, Prestressed Concrete Structures.

Name: Niraniya Rajesh (2016K1430037P)

Student Write-up

Short Summary of work done during PS-II: Design of Substructure and Superstructure of Bridges.

Tools used (Development tools - H/w, S/w): Stand. Pro and Excel sheets.

Objectives of the project: Design

Major Learning Outcomes: Became familiar with IRC Codes and Design Methods.

Brief Description of working environment, expectations from the company: All Seniors are very much helpful. Ready to listen.

Academic courses relevant to the project: Structural Design, Bridge Engineering, RCC Design, Pile Design.

Name: Sanjana Sankar P (2016H1430035P)

Student Write-up

Short Summary of work done during PS-II: Design structures keeping in view the sustainability and cost effectiveness of the structure, Review the designs submitted by other Structural Consultants , Prepare Structure related reports & Technical Proposals, Do site visits for checking the condition of the structure, the possibility of new structures, scope of alternate alignment and suitable construction methods. Make excel sheets which ease the design and design checks.

Tools used (Development tools - H/w, S/w): STAAD Pro.V8i, MIDAS Civil, AutoCAD, and Google Earth.

Objectives of the project: Design and Design Review of Structures, Cost effective and conservative construction, DPR & Technical Proposal Preparation.

Major Learning Outcomes: Deep insight of Structural Engineering which includes theoretical knowledge and practical experience, Enhanced my software skills and knowledge on typical and special type of structures under specific conditions.

Brief Description of working environment, expectations from the company: All the employees in LEA Associates are cooperative enough to clarify the technical doubts. The trainees in the company are treated as employees and are given important roles in major projects. Within a short span of time, I was

able to learn many things. I was able to understand how things actually work in a civil consultancy. Moreover, the consultancy sends us for Site Visit and the experience we get out of it makes the picture about Structural Engineering more clear.

Academic courses relevant to the project: Bridge Engineering, Project Planning & Management.

Name: Surbhi Jain (2016H1430036P)

Student Write-up

Short Summary of work done during PS-II: 1. Planning of Highway structures along the alignment: it includes deciding their location, span and alignment across the road. 2. Design of above Highway structures: It includes design of cross drainage structures like Box Culvert, Bridges (deck+girder system, pier cap, pier and open foundation) and underpasses. 3. Design of retaining structures: it includes design of RE Wall. Also design of shear key for it.

Tools used (Development tools - H/w, S/w): Staad Pro.

Objectives of the project: 1.To develops and plan cross drainage and passage structures along a proposed highway in conjunction with hydrology and survey data. 2. To obtain safe, efficient and economical design of these structures.

Major Learning Outcomes: 1. Design and Planning of highway structures, constraints involved and their solutions 2.To work in collaboration with different department team members.

Brief Description of working environment, expectations from the company: LASA, New Delhi is a good company to work with. Colleagues are always ready to help when in need. Initially it was difficult to understand as I was assigned random work but with time and guidance of my mentor, it became a good learning experience. Official timings are 9:30 am to 6:00 pm, it might get extended if one is loaded with work or some deadline is approaching. Only issue is lack of organized flow of work and absence of a canteen.

Academic courses relevant to the project: RCC Design, Earthquake engineering, Bridge Engineering and Design of Foundation subjected to dynamic loading.

Name: Undhad Dhaval H. (2016K1300048P)

Student Write-up

Short Summary of work done during PS-II: It's kind of mix experience. There is always two choices in the field of engineering, first one is safety and second are efficiency or cost. Which i am trying to learn with Design Fundamental or with the IRC standard of highway.

Tools used (Development tools - H/w, S/w): AutoCAD.

Objectives of the project: Safety Features design of Agra- Etawah national Highway.

Major Learning Outcomes: Road Furniture.

Brief Description of working environment, expectations from the company: As i said it's mix experience. Sometimes i was bored because of same work every day, there is no change. Lower amount of stipend, which is completely not unfair in metro city like Delhi.

Academic courses relevant to the project: Geometric design of Highway.

PS-II Station: LEA Associates, Kolkata

Student

Name: Arijit DasGupta (2016H1430041P)

Student Write-up

Short Summary of work done during PS-II: Full Analysis of Box Culvert and Design of the same using Limit State Method.

Tools used (Development tools - H/w, S/w): Staad Pro, Excel.

Objectives of the project: Analytical analysis of Box Culvert and its Behavior.

Major Learning Outcomes: Designing of Limit state Method.

Brief Description of working environment, expectations from the company: It was quite outstanding. All the seniors are co-operative and helpful.

Academic courses relevant to the project: Bridge Design Engineering

PS-II Station: Mahle Behr, Pune

Student

Name: Anirudh Mittal (2014A4PS0368P)

Student Write-up

Short Summary of work done during PS-II: I did three projects there titled- "Root Cause Analysis of ASN Correctness", "Warehouse Service Vendor Selection" and "Feasibility Study of Free Trading Warehousing Zone". All projects come under Supply Chain and Logistics and involve visiting different warehouses, seeing and analyzing contracts, interacting with suppliers, doing calculations, assuming parameters, making supplier decision matrix, sitting through negotiation etc. Data collection and analysis is a major component of all projects.

Tools used (Development tools - H/w, S/w): Excel.

Objectives of the project: Project objectives involved understanding current operating procedures and correcting it as well as selecting through various service providers and also to do a feasibility study.

Major Learning Outcomes: How to do- 1) Root Cause Analysis 2) Make Supplier Decision Matrix 3) Inventory Reduction and Feasibility Study.

Brief Description of working environment, expectations from the company: Working environment is good in the sense that there is immense opportunity in work in different core sector such as design, logistics, manufacturing, production, research and development under same roof. Also there is a canteen which provides snacks and lunch. Around 1000 people work in this plant and people are more or less helpful. Also the shop floor is big and uses all the lean manufacturing principle such as 5S, cells, one piece flow etc. Office timings are 9AM to 5:30 PM and also has a company bus but don't provide accommodation. Company exceptions totally depend on your mentor and department and can range from mentor meeting you daily to once every 2 weeks or more.

Academic courses relevant to the project: Supply Chain Management-Product Planning and Control- Lean Manufacturing.

PS-II Station: Mercedes Benz, Bangalore

Student

Name: Adithya (2016H1480058H)

Student Write-up

Short Summary of work done during PS-II: Flow and thermal analysis of side duct of A-class car line.

Tools used (Development tools - H/w, S/w): Star ccm+, GT-Suite.

Objectives of the project: To calculate the temperature drop in the side duct.

Major Learning Outcomes: exposure to tools star ccm+, gt-suite.

Brief Description of working environment, expectations from the company: Good working environment.

Academic courses relevant to the project: convection heat transfer, cfd.

Name: Akshay Sancheti (2014A4PS0239G)

Student Write-up

Short Summary of work done during PS-II: I was a part of Human Body Modeling team which was a sub-part of Occupant Safety team. My work involved finding the optimized activation value for holding human arm in a fixed posture. After my thesis was over I was assigned on a project where I worked on the head neck muscles of human body.

Tools used (Development tools - H/w, S/w): ANSA (Pre-processing tool), LS-DYNA (Processor), LS-Prepost (Post-processing tool), MATLAB Optimization toolbox, MS Excel.

Objectives of the project: To determine optimized neural stimulation and activation value for holding human arm in a fixed position.

Major Learning Outcomes: Human Body Modeling, Software.

Brief Description of working environment, expectations from the company: Working environment is good. You can get many opportunities to learn. However, after a period of time the work becomes to monotonous. Since this is a RnD center, exploring other departments/teams in the company is difficult. Chance of a PPO is slim for Bachelors and is dependent on the team you are working with.

Academic courses relevant to the project: FEA.

Name: B. SAI AKHIL (2014A4PS0835H)

Student Write-up

Short Summary of work done during PS-II: Wrote a Matlab code to get the stimulation values which would be required to activate the muscles. The activated muscles create force and thus movement.

Tools used (Development tools - H/w, S/w): Ansa, Matlab, Ls Dyna.

Objectives of the project: To find optimized stimulation values of arm muscles to keep its posture constant.

Major Learning Outcomes: Using LS DYNS, some meshing.

Brief Description of working environment, expectations from the company: The work atmosphere is very nice. The colleagues are co-operative. Will get to learn some professionalism before going to your real job later.

Academic courses relevant to the project: Finite Element Analysis.

Name: Shashank Kushwaha (2014A4PS0488P)

Student Write-up

Short Summary of work done during PS-II: Functional evaluation & comparison of different LS-DYNA material models to characterize PC-ABS and other materials.

Tools used (Development tools - H/w, S/w): LS-DYNA, Hypermesh, LS-Prepost, and Animator

Objectives of the project: Identify and generate different material cards which could be implemented using the available test data at different temperatures. Then compare the functioning of these material cards in the actual car line.

Major Learning Outcomes: Creating material cards in LS-DYNA, learning in detail about stress-strain curves (different formats in which these are used in material cards i. e Eff. plastic stress vs Eff. plastic strain or truess stress vs true strain).

Brief Description of working environment, expectations from the company: Flexible working hours. All the employees were very friendly and were ready to help me in every possible way. All the interns are given a training plan which they are supposed to follow along with some other work that mentor or reporting manager may ask an intern to do (related to the project).All the necessary training (if required), is given during the first two months. As long as work is done on time, no one will question your working hours. Regarding the expectations, MBRDI doesn't expect interns to create miracles. They just expect interns to follow the training plan.

Academic courses relevant to the project: Materials Science & Engineering, FEM (Basics)

Name: Tippu Chathukulam (2016H1480055H)

Student Write-up

Short Summary of work done during PS-II: 1D_3D coupled Vehicle under hood Simulations

Tools used (Development tools - H/w, S/w): GT, STARCCM+

Objectives of the project: Better prediction of heat rejection from radiator coolant flow properties

Major Learning Outcomes: Gained knowledge about 1D (GT) simulations and 3D (STARCCM+) simulations, Heat exchanger modeling and Co-simulation methodology.

Brief Description of working environment, expectations from the company: Pleasant working environment.

Academic courses relevant to the project: CFD, Heat transfer

Name: Varun Kaushik (2014A4PS0780P)

Student Write-up

Short Summary of work done during PS-II: Thermal simulations are done on different components of the car. Simulation and validation is the main focus.

Tools used (Development tools - H/w, S/w): STAR-CCM+

Objectives of the project: To validate simulations with test results

Major Learning Outcomes: CFD, problem solving analysis.

Brief Description of working environment, expectations from the company: Working environment is good at MBRDI. The organization wants to get the work done in the assigned time period. It is upon the student to manage his/her time. Employees are very supportive and ready to help at any time.

Academic courses relevant to the project: CFD, Heat Transfer, Fluid Dynamics.

PS-II Station: National Aerospace Laboratories, Bangalore

Student

Name: Amrut Modani (2013B5A40459G)

Student Write-up

Short Summary of work done during PS-II: Title of project is 'Experimental investigation of fluid structure interaction in flapping wing Micro Aerial Vehicle', which includes force-power measurement and 2D phase lock Particle Image Velocimetry (PIV).

Tools used (Development tools - H/w, S/w): ATI Mini 40- Force/Torque sensor, Arduino, TSI PIV setup, High speed cameras, MATLAB, Solidworks, and Lab View

Objectives of the project: To find the correlation between wings' flexibility to aerodynamic forces involved.

Major Learning Outcomes: Concepts of unsteady aerodynamics, different cutting edge experimental techniques experience, research environment.

Details of papers/patents: Yet to be published into Journal of fluid and structures.

Brief Description of working environment, expectations from the company: Working environment is highly encouraging as different projects are going on at the lab simultaneously under scientists, at the same time, you can work with them apart from your own project to learn from various experts. They expect student to have basic knowledge of core concepts, they don't have any prerequisites for in-depth knowledge of any subject.

Academic courses relevant to the project: Fluid mechanics, low speed aerodynamics, and other mechanical core subjects.

PS-II Station: National Chemical Laboratory, Pune

Student

Name: Kushal Sharma (2016H1010019P)

Student Write-up

Short Summary of work done during PS-II: A deep learning neural network predictive controller was developed to control the inlet jacket temperature to CSTR. This controller was a combination of deep learning and model predictive control strategies. The open simulation data was trained using deep learning and was fed to model predictive controller to perform control action. This led to faster rejection of disturbances and enhanced control performance.

Tools used (Development tools - H/w, S/w): MATLAB

Objectives of the project: Application of Deep learning in chemical engineering.

Major Learning Outcomes: MATLAB, Deep Learning

Brief Description of working environment, expectations from the company: The working environment is good. You have to come to solutions of your problems on your own. New ideas are well received and you are encouraged to push beyond your limits.

Academic courses relevant to the project: Neural Networks, Advance Process Control

Name: Mohak Bothara (2016H1010013P)

Student Write-up

Short Summary of work done during PS-II: Data modeling on data of compounds using python, to build model equation with optimum number of variables selected using optimization methods such as simulated annealing and model building using multiple linear regression, partial least square regression, and support vector regression.

Tools used (Development tools - H/w, S/w): Python

Objectives of the project: To build a model equation to predict physical properties of the compounds on basis of the descriptor variables. (QSPR modeling)

Major Learning Outcomes: Python coding, QSPR theory

Brief Description of working environment, expectations from the company: Awesome and productive working environment. Good for learning new things.

Academic courses relevant to the project: Relatively the field is a new addition so no course.

PS-II Station: National Council of Applied Economic Research, Delhi

Student

Name: Vishnu Tella (2013B3PS0591P)

Student Write-up

Short Summary of work done during PS-II: Worked on a project by the Ministry of Skill Development and Entrepreneurship relating ITI (Industrial Training Institute) up gradation scheme. The aim of the scheme was to upgrade existing government ITIs from

Tools used (Development tools - H/w, S/w): Stata, Ms Excel, Ms Word, Ms PowerPoint

Objectives of the project: The aim of the project was to check if the funds invested into the ITI up gradation scheme were being utilized properly.

Major Learning Outcomes: Quantitative and Qualitative analysis of data

Brief Description of working environment, expectations from the company: The company is very strict about punctuality. Our mentor is very knowledgeable. We have been given our own desktop and a cubicle. The company has regular seminar on different topic by renowned economists and interns are encouraged to attend all seminars. All the coworkers are really friendly and always willing to help us out if we face any problems.

Academic courses relevant to the project: Development Economics.

PS-II Station: NBC Bearings, Jaipur

Student

Name: Kirti Singh (2016H1410049H)

Student Write-up

Short Summary of work done during PS-II: FEA analysis of ball bearing to determine the potential failure modes when bearing is subjected to stresses beyond the material limit. And to study on truncation when it is subject to axial load. To analyse the stress distribution when truncation is observed. Second project was related to application mapping of two wheeler vehicle. To establish the link between bearings variants.

Tools used (Development tools - H/w, S/w): Abaqus software, excel

Objectives of the project: Derive the application specific trends based on generated data for application. And to analyze the bearing for different stress level and to determine the potential failure modes and stress distribution when truncation is observed

Major Learning Outcomes: Understanding of bearings and its application. Technical aspects of bearing (truncation, stress distribution when it is subjected to beyond material limit)

Brief Description of working environment, expectations from the company: If you are willing to learn, you will get lot of opportunity to explore. Overall very supportive environment.

Academic courses relevant to the project: FEM, Applied Mechanics.

PS-II Station: Shell Technology Center, Bangalore

Student

Name: S Adjay Sagar (2014A1PS0556G)

Student Write-up

Short Summary of work done during PS-II: Biomass pyrolysis process has the potential to cater to the world's increasing energy appetite. Solar and other high density energy storage technologies are in the early stages of development and could mature for commercialization in a few more decades. Commercial bio-fuel projective based on an ethanol/DME based models have also received their due consideration, but, these processes are plagued by the energy intensive a zoetrope separation step. IH2 is a promising technology based on fast pyrolysis based devolatilization and produces fuels that can directly power conventional gasoline engines, without any additional processing or up gradation. Moreover, technology can also process municipal solid waste, which remains a major hygiene problem in developing countries. Efficient reactor design is key to the success of commercial scale projects. In this work, particle scale models were developed for the biomass devolatilization process. Biomass pyrolysis involves a complex array of physical and chemical transformations. Micro-scale phenomenon's like conduction and convection in the particle were investigation by solving the fundamental governing equations. Physical mechanisms like internal convection and pore diffusion were incorporated. The models seeks to provide yardstick conversion time values that would guide the overall design process. The Lattice-Boltzmann technique was also explored to resolve for the flow and temperature field around the particle.

Tools used (Development tools - H/w, S/w): Matlab, Python, and Latex

Objectives of the project: Predicting devolatilization time for commercially sized biomass particles

Major Learning Outcomes: Lattice Boltzmann Method, Understanding of commercial value of industrial projects.

Brief Description of working environment, expectations from the company: Shell technology center has a state of the art infrastructure one can expect the best working and learning environment provided one has the interest. Mentors value your inputs and expect you to maintain a good work-life balance. One can expect and should meet a lot of researchers, from a varied countries and backgrounds, if one wishes to pursue a research oriented career. Teams sometimes organize activities in the amenities

center and one is encouraged to use the facilities. Job opportunities have been scarce for undergraduates, partly since it is a research center. Significantly better and high paying jobs are available for PhD and MBA graduates.

Academic courses relevant to the project: Transport Phenomena, Numerical Methods for Engineers, Heat Transfer, Multiphase Flows.

PS-II Station: SKF India Ltd., Bangalore

Student

Name: Kondakindhi Bhargav Reddy (2014A4PS0362P)

Student Write-up

Short Summary of work done during PS-II: My scope of work is to theoretically assess the feasibility of recovering waste heat from both air compressors and quenching oil bath in running an adsorption chiller instead of depending on vapor compression plant.

Tools used (Development tools - H/w, S/w): Google Scholar for papers search, Microsoft Excel for data, PowerPoint for presentations

Objectives of the project: To utilize waste heat within the factory and saving energy & money

Major Learning Outcomes: 1) Potential of waste heat and estimates of them in real industries which when utilized can save energy, environment and money. 2) Professional skills on communicating with skills Details of papers/patents: 1) K Habib et al 2015 IOP Conf. Ser.: Mater. Sci. Eng. 88 012068 2) Habib, Khairul et al. "Study On A Solar Heat Driven Dual-Mode Adsorption Chiller". Energy, vol 63, 2013, pp. 133-141. Elsevier BV, doi:10.1016/j.energy.2013.10.001. 3) Jouhara, Hussam et al. "Waste Heat Recovery Technologies and Applications". Thermal Science and Engineering Progress, vol 6, 2018, pp. 268-289. Elsevier BV, doi:10.1016/j.tsep.2018.04.017. Accessed 26 May 2018.

Brief Description of working environment, expectations from the company: The company expects from me only the theoretical conceptualization and not exact practical implementation. This is because it involves huge investment and lot of decision making in the process. I too clearly understand the limitations. The working environment is as in a typical design/manufacturing engineering division. Though my project is not one of their core areas, I am given a vacant workstation to sit and do work.

Academic courses relevant to the project: Thermodynamics, Heat Transfer and Refrigeration & Air-conditioning.

PS-II Station: SKF, Haridwar

Student

Name: Teli Nikhil Nagesh (2016H1060123P)

Student Write-up

Short Summary of work done during PS-II: Production troubleshooting, DOE of machines

Tools used (Development tools - H/w, S/w): Minitab

Objectives of the project: Quality Improvement of bearing produced by channel No. 1

Major Learning Outcomes: Hand on Minitab, Excel

Academic courses relevant to the project: Quality

PS-II Station: Skoda Auto India Pvt. Ltd., Aurangabad

Student

Name: Raval Kuldeep Sharadchandra (2016H1420113P)

Student Write-up

Short Summary of work done during PS-II: Implemented inventory management system hall A & C, Predictive breakdown analysis will reduce breakdown time by 185 minutes.

Tools used (Development tools - H/w, S/w): Excel, MS PowerPoint.

Objectives of the project: To implement inventory management system in Hall A, B & C store.

Major Learning Outcomes: Negotiations, Leadership, Decision making.

Brief Description of working environment, expectations from the company: Working environment is very good. Every day you may get challenges in your work. I had expectation of PPO from the company and gave interviews in Marketing, after sales, Planning, Logistics, R & D and Homologation. Try to give as many as interviews as it will increase your chance to absorb.

Academic courses relevant to the project: Yes. I was allocated Maintenance department and I learnt Maintenance engineering in my academics.

PS-II Station: Skoda Auto India Pvt. Ltd., Mumbai

Student

Name: Himanshu Agrawal (2014A4PS0165P)

Student Write-up

Short Summary of work done during PS-II: I was in the Customer Experience Department. The work was almost completely Excel Based. I did some data analysis to understand the trend in customer concerns and other parameters of customer satisfaction.

Tools used (Development tools - H/w, S/w): Microsoft Office.

Objectives of the project: Analysis of customers concerns to find out critical areas of failure and what can be done for improvement.

Major Learning Outcomes: Attention to Details. Importance of different parameters in Analysis. Communication Skills.

Brief Description of working environment, expectations from the company: Work Environment is quite relaxed and comforting, timings are generally flexible, although that will depend on your mentor. Your suggestions are considered and discussed for their merits and demerits.

Academic courses relevant to the project: Probability and Statistics, Project Appraisal.

Name: Rohit Subramaniam (2014A4PS0331P)

Student Write-up

Short Summary of work done during PS-II: Skoda Auto, Mumbai an SSM (Sales, Service and Marketing) office. I was in the after-sales department. I was into the monitoring of campaigns. Majority of the tasks were done using MS Excel and PowerPoint. Although the work does not improve technical knowledge/skill, the experience definitely teaches you communication, presentation and office politics.

Tools used (Development tools - H/w, S/w): MS Excel, MS PowerPoint, MS Word, SAP Business Warehouse

Objectives of the project: 1. Monitoring of campaign performance and sensitizing dealerships about their performances. 2. Communicating with service heads of dealerships regarding performance.

Major Learning Outcomes: Soft Skills, Presentations, Data analysis, Discipline

Brief Description of working environment, expectations from the company: The working conditions are very friendly. Helpful colleagues, neat office environment (Fully air-conditioned), healthy working condition. Unfortunately, there are no recreational facilities. You are expected follow discipline like punctuality, formal dressing and polite conversations. You are expected to complete the tasks on time. Timings are 9.30 am to 6.30 am. But, you may be expected to stay back depending upon the situation.

Academic courses relevant to the project: Business Communication, Production Planning and Control, Quality control

Name: Rushi Mehta (2014A4PS0338G)

Student Write-up

Short Summary of work done during PS-II: I was allocated Product Marketing department which was based on FCFS. In this department my basic work of market intelligence where i have to collect some of the information from competition by mystery shopping and prepare competition analysis PPTs for my mentor who present those to SSM director. Apart from this I had to maintain some of the monthly files like accessories stock planning, accessories sales, market review, price step and price index files.

Tools used (Development tools - H/w, S/w): MS Excel, MS PowerPoint

Objectives of the project: Study competition in Product Marketing & Accessories

Major Learning Outcomes: Market research, pricing and marketing strategy, Indian automobile market scenario etc.

Brief Description of working environment, expectations from the company: Good working environment. You'll have to work on your own to get more knowledge about concerned topics because mentors won't help you much as you are dealing with confidential information. I would say only sales planning and product marketing are good departments where you'll actually get to learn otherwise you'll be only preparing excel files. Good chances of PPO if you work well.

PS-II Station: Skoda Auto India Pvt. Ltd. (Chakan), Pune

Student

Name: Tejas Chaudhari (2014A4PS0317G)

Student Write-up

Short Summary of work done during PS-II: Worked on the upcoming projects in Skoda. The work is related to management and no technical skills are required. Knowledge of automotive industry is useful.

Tools used (Development tools - H/w, S/w): PowerPoint and Excel.

Objectives of the project: Connected Cars proposal.

Major Learning Outcomes: Soft skills, team work, proposal strategy and evaluation, market research.

Brief Description of working environment, expectations from the company: Excellent working environment.

Academic courses relevant to the project: No course seems that relevant.

PS-II Station: Spicer India Ltd., Jodalli

Student

Name: Bastin Jose (2014A4PS0234P)

Student Write-up

Short Summary of work done during PS-II: Standardization of work using SWCT. Identify waste activities like walking and waiting and reduce it by combining multiple operations or so without affecting the productivity. Decreased the safety burden by altering the layout of machines for smooth flow of materials and optimal use of manpower.

Tools used (Development tools - H/w, S/w): Avix, Autocad, MS Excel.

Objectives of the project: Decrease safety burden, increase parts per man hour, decrease manual work, motion and decrease lead time.

Major Learning Outcomes: Develop knowledge about large scale production. Learn the concepts of cycle time, Takt time, lead time, OEE both in theory and practice.

Brief Description of working environment, expectations from the company: It is a great place to learn and develop ideas. But the company doesn't provide proper working place or PC to interns. So I have to adjust between two chambers with borrowed chair from conference room and with my own laptop for work with the permission from sub-department head. I don't have any problem with that. But the company's IT policy doesn't allow anyone bringing their personal laptops. This issue was temporarily resolved by HR.

Academic courses relevant to the project: Lean manufacturing, Production techniques.

PS-II Station: Spicer India Ltd., Pune

Student

Name: Shubhanshu Bahuguna (2014A4PS0176G)

Student Write-up

Short Summary of work done during PS-II: The work in my department primarily includes retrieval of data and follow ups on the company's suppliers and observation and analysis of the Supply Chain components such as number of parts supplied per month and planning of component numbers required in the forthcoming months as per the requirements and market price fluctuation factors. The work for the most part is documentation and some Sourcing and Supply Chain related work.

Tools used (Development tools - H/w, S/w): PLM - Team Productivity, Excel.

Objectives of the project: Supply chain consolidation.

Major Learning Outcomes: Actual working of supply chain, how the supply chain is planned and deals are made with the suppliers.

Academic courses relevant to the project: Supply Chain Management.

PS-II Station: Synergiz Global, Hyderabad

Student

Name: Nandini (2016H1440030P)

Student Write-up

Short Summary of work done during PS-II: Product development, Tender search and Document review.

Tools used (Development tools - H/w, S/w): Excel, Primavera, MySQL, Asana, and Tableau.

Objectives of the project: Project Management tool development and implementation.

Major Learning Outcomes: A great corporate atmosphere to start with. I have learned how to work in a team, share and work.

Brief Description of working environment, expectations from the company: It was a great learning experience working at Synergiz Global. The staff was quite supportive and promoting. They took my interest into consideration and assigned task relevant to the same.

Academic courses relevant to the project: Construction Management, Airport.

Name: Sadhana Adavelli (2013B2A20632H)

Student Write-up

Short Summary of work done during PS-II: Preparing Dashboards on the Project going on different areas and different categories like Railways, Metro Rails, Airports, Buildings and High Speed Rails.

Tools used (Development tools - H/w, S/w): MySQL, Tableau, and Excel.

Objectives of the project: Consultancy work on Government Project.

Major Learning Outcomes: MySQL, Tableau.

Brief Description of working environment, expectations from the company: Good Work environment, Correct Place to learn more work in less time.

PS-II Station: Tata Autocomp Systems Ltd., Pune

Student

Name: Amaljith Cyriac (2014A4PS0414P)

Student Write-up

Short Summary of work done during PS-II: I was assigned to purchase dept. of one of the business units of Tata Autocomp, in Tata Hendrickson Suspensions Pvt Ltd. At THSL, they assemble Suspensions, lift axles etc and dispatch. They do not give an employee Id or a system in that office which will make doing normal work impossible. So mostly they told me to do work in other departments too. If you get assigned to R&D, its good; you will get a system and good projects. But in my case, the project related to material quality and supplier visits. I had to visit the supplier plants and verify some points. The good things about my PS is I was able to see all the departments, how they work and also help with their work which gave me a better understanding of the company. I also was able to visit some supplier factories talk to them about processes and all. The people are friendly too at THSL. So by working there, I was able to understand not 1 dept but many. Along with that, I also took part in an event organization and participated with company for another program. So even though my project wasn't very good, my experience there was very good.

Tools used (Development tools - H/w, S/w): Excel, Solidworks.

Objectives of the project: Analyze the quality complaints and suggest ways to improve quality through horizontal deployment.

Major Learning Outcomes: Working of purchase, materials and quality dept, manufacturing processes used at suppliers, fixture assembly process, event organization.

Brief Description of working environment, expectations from the company: The people are really friendly and helpful. They don't give a PC if you are not in R&D, so if there is no spare pc lying around, you are not assigned one. You can use spare PC using other employee ids. I did my works when some PC was free, either they went to shop floor or was absent that day. You can ask for help to anyone though, they will help you with it, Just follow up though. My expectations are they give PC to interns when not in R&D also. They didn't think through what I would do without a PC in purchase dept. They wanted an extra person in that dept but then didn't give the tool to work there.

Academic courses relevant to the project: SCM, Manufacturing processes, quality control and reliability.

PS-II Station: Tata Motors Ltd., Jamshedpur

Student

Name: Ravish Kumar (2014A4PS0015P)

Student Write-up

Short Summary of work done during PS-II: My project in Tata Motors was in the quality department. It was titled as Process control, FMEA control plan of SFC & other Trim lines with special focus on door force reduction. For this, I studied different processes used in making a cab. After this I tried to find out loopholes in them which are responsible for friction resulting in higher door force. The problem was critical to quality so I was required to approach this systematically. Quality management tool like Six-Sigma (DMAIC) was used for that. However I didn't have prior experience with this methodology but my mentor guided me all of these methods very smoothly. The overall PS-II experience has been a very important learning curve in my educational journey. I have always been interested in the ways of working of industries and PS-II helped in experiencing this on a personal level. It not only helped me develop skills required in my field but also helped me develop my overall professional conduct.

Tools used (Development tools - H/w, S/w): Six-Sigma (DMAIC).

Objectives of the project: 1.To find out different causes which are creating higher door force and ultimately suggest solution for the same. 2. Study on various aspects related to door like operations performed on door, design parameters, hinge used etc.

Major Learning Outcomes: I learned about different stages of production of any commercial vehicle. It has also provided me experience in quality management tools like Six-Sigma (DMAIC).

Brief Description of working environment, expectations from the company: Tata Motors provided me a conducive environment to learn. It produces different types of vehicles; especially in Jamshedpur plant commercial vehicles are being manufactured. It has given me enriching experiences in automobile field. Project allotment process is more or less random however; if anyone wants in some particular field then they might consider change. Mentors were very much helpful. Sometimes they were not able to give much time but whenever I persevered, they guided me well. Here, I learned many things from operators itself. They were also of very kind nature and explained everything that they knew. Overall, I loved working in Tata Motors. I am hoping that, company will appreciate my work and try to implement the solution which i have provided.

Academic courses relevant to the project: Production planning and control, Machine design and drawing, Production techniques.

Name: Saurav Kumar (2014A4PS0331G)

Student Write-up

Short Summary of work done during PS-II: Work involved study and improvement of SFC BIW through improvement in processes and controlling behavior of sheet metal components in assembly. Also in job training with component and fixture inspection.

Tools used (Development tools - H/w, S/w): CMM (bridge type, dual Horizontal arm type and portable with scanner), assembly fixtures, dies, CMM Inspection software such as Polyworks, CALIGO, and documentation through Ms Excel, MS Project and PowerPoint.

Objectives of the project: PIST improvement of SFC BIW.

Major Learning Outcomes: Sheet metal handling and assembly, learning various manufacturing processes, CMM measurements and job alignment, use of various metrology tools such as micro height gauge, surface roughness, slip gauge.

Details of papers/patents: SFC BIW PIST improvement from 40 percent to a consistent value of 76 percent.

Brief Description of working environment, expectations from the company: Working colleagues' very helpful, exposure to various jobs and processes. However the introduction and orientation of the work and its requirements could be more systematic.

Academic courses relevant to the project: Computer Aided Design, Automotive Vehicles.

PS-II Station: Techture Structures Pvt Ltd., Nagpur

Student

Name: Aditya Vardhan Ganji (2014A2PS0635H)

Student Write-up

Short Summary of work done during PS-II: I am involved in various projects in the organization. The tools used are Revit, Auto-CAD. The work done includes modeling in Revit for various kinds of buildings starting from Metro, Underground tunnels, Water Management Systems. The Projects are mostly sub-contracts from major BIM and Architectural firms.

Tools used (Development tools - H/w, S/w): Revit, AutoCAD

Objectives of the project: Finishing the project in time as per the client's requirements.

Major Learning Outcomes: Team Work, Interactions in the corporate world.

Academic courses relevant to the project: Engineering Graphics, Design of Concrete Structures.

PS-II Station: Thornton Tomasetti, Mumbai

Student

Name: Nikhil VR (2016H1430034P)

Student Write-up

Short Summary of work done during PS-II: Shop drawing review was the bulk of my work here.

I have also worked on some design calculation check and steel connections.

Most of my work was on al-thumama stadium.

Review and approval was my job here.

Tools used (Development tools - H/w, S/w): Blue beam Revu.

Objectives of the project: Check the Drawing of the Structural Part of the Project.

Major Learning Outcomes: Design, Framing Of Smaller Elements, Different Parts of the Stadium, Different Types of Beams, Column, Connections.

Brief Description of working environment, expectations from the company: A Great Place to Work and a Great Learning Experience.

Academic courses relevant to the project: Advanced Steel Structures.

Name: Venkatasalam K L (2016H1430020H)

Student Write-up

Short Summary of work done during PS-II: Shop drawing review of RCC beams, columns, slab, Post tensioned slab, haunched beams.

Tools used (Development tools - H/w, S/w): Blue beam Revu.

Objectives of the project: Review of RCC and Steel Submittals.

Major Learning Outcomes: Understood actual application of the concepts learnt in classroom.

Brief Description of working environment, expectations from the company: The working environment is a growth oriented and quality driven one along with importance to every minute detail to retain the actual perfection that needs to be maintained at a professional level. Joining in this company was really helpful and it was worth the time here.

Academic courses relevant to the project: Design of Reinforced Concrete Structures.

*PS-II Station: VMS (Vakil Mehta Seth) Consultants Private Limited,
Mumbai*

Student

Name: Kaushik. B (2016H1430021H)

Student Write-up

Short Summary of work done during PS-II: Analysis and Design of structures.

Tools used (Development tools - H/w, S/w): Software tools used: ETABS 2016, SAFE, STAAD Pro.

Objectives of the project: Analysis and Design of Structures.

Major Learning Outcomes: Major learning outcomes involve the understanding of the structures and application of course related work in the real time field.

Brief Description of working environment, expectations from the company: As a whole, working environment is positive and the surroundings are supportive enough to promote growth, both at technical and personal level. Overall experience was positive.

Academic courses relevant to the project: Structural Analysis, Design of Steel structures and Design of Reinforced Concrete.

Name: Praveen Thomas (2016H1430039P)

Student Write-up

Short Summary of work done during PS-II: Analysis and Design of Residential and Industrial Structures. Latest Indian codes were used for design. Got opportunity to work in live projects in Mumbai and Uttar Pradesh. Designed sugar godown, power house building, 4-types of Quarters building (varying from 2-3 storey), Canteen building, Steel canopy, Hoarding, and a sports complex.

Tools used (Development tools - H/w, S/w): Etabs, Staad, Safe, Rcdc, Autocad, Ms Excel.

Objectives of the project: Analysis and design of Industrial structures as per latest IS code provisions.

Major Learning Outcomes: Learn and understand current design practices and the use of latest design codes.

Brief Description of working environment, expectations from the company: Best company for learning. Opportunity to work on live projects and with senior design engineers in the country.

Academic courses relevant to the project: Advanced Structural Analysis, Earthquake Engineering, Advanced Steel Structures, Design of multistory Structures.

Domain: Eco & Finance & Management

PS-II Station: American Express India, Bangalore

Student

Name: RAGHAV MANTRI (2014A7PS0453P)

Student Write-up

Short Summary of work done during PS-II: Worked on XGBoost (Gradient boosted decision trees). Making it online for fraud detection.

Tools used (Development tools - H/w, S/w): C++, Python, and shell script, GitHub.

Objectives of the project: Making fraud detection algorithm being used, online.

Major Learning Outcomes: Gradient Boosting, Regression, Shell script.

Brief Description of working environment, expectations from the company: Mostly masters and Phd. Not many perks like those in tech companies. Good work.

Academic courses relevant to the project: DSA, DAA, Programming in C. Machine Learning.

PS-II Station: Bombardier, Delhi

Student

Name: Rohith Ananth (2016H1490242P)

Student Write-up

Short Summary of work done during PS-II: * Bid Management * Sales Planning * Proposal Management
* Go-to-Market Strategies * Local Ecosystems * Rail Manufacturing.

Tools used (Development tools - H/w, S/w): * Sharepoint * Spreadsheets * Powerpoint.

Objectives of the project: To understand the Market Development in the Rail Manufacturing industry and winning tenders in a competitive environment.

Major Learning Outcomes: * Business Planning * New Product Development * Business Development * Project Planning * Cost Optimization.

Brief Description of working environment, expectations from the company: * Flexible work environment * Focus on learning and development * Support from management * Expectation to deliver value in short time. * Ability to own and manage things on your own. * Self Starter.

Academic courses relevant to the project: * Supply Chain Management * Marketing * Finance courses * Contractual & Legal Frameworks * Production & Operations Management.

PS-II Station: Bombardier Transportation, Hyderabad

Student

Name: K Prasannavenkatesan (2016H1480057H)

Student Write-up

Short Summary of work done during PS-II: Tool development for pressure drop prediction in HVAC ducts was taken up as a major outcome of the project. The HVAC ducts are present in the ceiling of the trains to distribute conditioned air (heated/cooled) into either the driver's cabin or the passenger's compartment. The sizing of these ducts is a major concern as its influence percolates into the design, sizing and costing aspects as well. Moreover, the design size of the ducts would give a value of pressure drop occurring inside when air in the required conditions flows through it. This value of pressure drop would affect the sizing of other components like fan, diffuser, etc. Therefore, in this project a 1D tool was developed to predict this pressure drop value so as to estimate the duct sizing, material, cost and other factors too. Apart from this, support was also provided to study and calculate heat transfer occurring in driver's cabin and its effect on the heat load of the space. Moreover, other tasks were taken up to study the thermal bridges and their effect on the temperature distribution inside the passenger's compartment.

Tools used (Development tools - H/w, S/w): MS Excel, JT Viewer, analysis software.

Objectives of the project: Development of 1D tool for predicting Pressure drop in HVAC ducts.

Major Learning Outcomes: Thermal comfort parameters - temperature, air speed, pressure drop and humidity, in metro trains and their influencing factors like insulation, ducting, etc.

Brief Description of working environment, expectations from the company: The working environment is a very professional one. The office is set up in the CYIENT - Manikonda campus, as of now and is one with facilities almost equaling international standards. The interns are also treated at par with the employees, barring certain restrictions on some software and drive access, which is totally understandable and correct. The expectations from the company are simple. Professional work ethic, fresh perspectives in problem solving and willingness to learn new things about the processes, product and its life cycle. Moreover, enthusiasm to work towards bringing out some innovative solution to problems.

Academic courses relevant to the project: Fluid Mechanics/Dynamics, Heat Transfer, Heating and Cooling of buildings and CFD.

PS-II Station: Frost & Sullivan, Chennai

Student

Name: Gaurav Kumar (2016H1490270P)

Student Write-up

Short Summary of work done during PS-II: Create support documents that act as a feeder to the project execution and Support the consultant team with meaningful desk and primary research. Industry covered- Oil and gas, petrochemicals, chemicals, fertilizers, power generation, transmission and distribution, steel and other metals, automotive, transportation and logistics, among others.

Objectives of the project: To research and understand the various industry where growth is sustained and help the company to focus on those segments in the market research reports.

Major Learning Outcomes: Proficiency in marketing research- both primary and secondary.

Brief Description of working environment, expectations from the company: Work environment is good and learning. Colleagues are very helpful and supportive. Company is doing good and shall grow more.

Academic courses relevant to the project: marketing research, Managerial accounting, statistics.

PS-II Station: Credit Suisse - Global Markets Controls COO, Mumbai

Student

Name: Moumita Sen (2016H1490218P)

Student Write-up

Short Summary of work done during PS-II: I was part of Control Attestation Team in Global Market Controls. I was involved in maintaining the controls inventory, automating process using VBA(Macros), performing design effectiveness assessments of controls, performing operating effectiveness assessments of controls. Performing tyre-kicks and deep dives on the execution of controls, to provide an objective assessment for IB front office management. Evidencing and substantiation of the supervisory and control processes undertaken.

Tools used (Development tools - H/w, S/w): Excel, PowerPoint, Internal tool for maintaining inventory of control.

Objectives of the project: The objective is to understand the overall process of Controls attestation followed in Credit Suisse and understand their importance from a Risk Mitigation perspective.

Major Learning Outcomes: 1. Use of controls to mitigate Operational Risk. 2. Processes related to trade life cycle. 3. Supervision and oversight of the front office. 4. Enhancement of IT skills.

Brief Description of working environment, expectations from the company: The work environment is employee friendly. The expectation from the company was that the work would be related to the courses studied specially FRAM but the nature of work was different. But the work was related to Risk mitigation and the team was also very helpful and facilitated my learning process.

Academic courses relevant to the project: Fluid Mechanics/Dynamics, Heat Transfer, Heating and cooling of buildings and CFD.

PS-II Station: Credit Suisse - Product Control, Pune

Student

Name: T Shanmuk Anirudh (2016H1490206P)

Student Write-up

Short Summary of work done during PS-II: P&L reporting of the trades booked by traders in FX derivative products. Reconciliation of balance sheet and P& L in different IT systems. Process Improvement of untested inventory reporting process.

Tools used (Development tools - H/w, S/w): Excel, VBA.

Objectives of the project: Ensure reporting of Profit and Loss without breaks. Perform mark to market of trades booked.

Major Learning Outcomes: Different functions of Product Control in Investment Banking, P and L reporting process, Reconciliation of accounts.

Brief Description of working environment, expectations from the company: Work Environment is encouraging and challenging both. Expectation from the company is to have good learning appetite. Well versed with excel and financial products. In time reporting of p&l.

Academic courses relevant to the project: Derivatives and Risk Management.

PS-II Station: Credit Suisse - Market Risk Quant, Mumbai

Student

Name: Kratagya Mittal (2014A2PS0606H)

Student Write-up

Short Summary of work done during PS-II: Market changes have a deep impact on an organization performance and portfolio. So there is an inherent risk due to losses in an organization's position arising from movements in market risk. The liquidity of various products in the portfolio also defines the risk parameter as in the time of need the illiquid products in its portfolio cannot be sold off to compensate that risk. The organization therefore has to manage its capital accordingly so that it has adequate assets in hand to offset the oncoming risk. For the above purpose the portfolio of the organization has to be assessed for the probability of the adverse circumstance and the cost of it to that firm. The measurement of the capital requirement is done by various ways majorly by using VaR (Value at risk). VaR is not able to capture the complete picture of the risk arising due to market factors so the firms now have an internal model to capture or compute the risk capital charge.

Tools used (Development tools - H/w, S/w): VBA, R.

Objectives of the project: To capture and understand the market liquidity and risk of the bank.

Major Learning Outcomes: Banking regulations and minimum capital requirement for banks.

Brief Description of working environment, expectations from the company: Working environment of Credit Suisse is amazing and the employees are very helpful and understanding.

Academic courses relevant to the project: FRAM (Financial risk analysis and management), DRM.

Name: Sampada Desai (2014A3PS0416H)

Student Write-up

Short Summary of work done during PS-II: I worked at Credit Suisse in the FRTB IMA division of Market Risk Quant department. The team within the FRTB IMA is responsible for calculating the minimum capital charge of the firm using the Internal Models Approach under Fundamental Review of the Trading Book (FRTB).

Tools used (Development tools - H/w, S/w MS Excel, VBA.

Objectives of the project: Calculating Expected Shortfall for finding out minimum capital requirements for Market Risk via Internal Models Approach (FRTB).

Major Learning Outcomes: Concept of Value at Risk (VaR), Fundamental Review of Trading Book (FRTB), Expected Shortfall.

Brief Description of working environment, expectations from the company: Friendly Working Environment, Flexible working hours.

Academic courses relevant to the project: Financial Risk Analytics and Management.

PS-II Station: Credit Suisse - Product Control, Pune

Student

Name: Srinivas Likith Ravula (2014AAPS0302H)

Student Write-up

Short Summary of work done during PS-II: Learn Backtesting techniques and use that knowledge to develop tools to provide a seamless process of analysis.

Tools used (Development tools - H/w, S/w): R, SQL, VBA, Python, and Excel.

Objectives of the project: Build tools for backtesting.

Major Learning Outcomes: Learnt the fact that people cheat you to make you work and abscond once their work is done. But mostly coding.

Brief Description of working environment, expectations from the company: Great working environment. You are given access to a lot of documents, High speed internet, not so fast desktop. The stuff one learns here is more than one can gobble.

Academic courses relevant to the project: learn r, python, sql, Vba and do a few courses related to excel on Coursera. Which is more than sufficient.

PS-II Station: Credit Suisse - MLR Non-quant, Mumbai

Student

Name: Kshitij Kumar (2013B4A40513G)

Student Write-up

Short Summary of work done during PS-II: I worked in the MLRM team (market liquidity risk management) which works on valuating counter party credit risk. This required understanding of basic financial concepts, such as pricing of options, bonds, futures, forwards, credit spreads swaps and other market derivatives. Calculation of profit and loss is done in different scenarios and various hedging strategies are used to minimize the losses. The team works on xVA (x - Valuation Adjustment), VaR (Value at Risk) and RWA (Risk Weighted Average). My work focused on xVA in which different risk types for various counter parties and hedge books were analyzed and changes observed were validated and justified. On the basis of this, several weekly and monthly reports were made.

Tools used (Development tools - H/w, S/w): Microsoft office, Visual basic for applications, R studio.

Objectives of the project: Valuation of Counterparty Credit Risk.

Major Learning Outcomes: Understanding financial concepts and the working of an Investment Bank.

Brief Description of working environment, expectations from the company: Credit Suisse provides a very open, amiable and accessible environment, where interns are encouraged to learn and understand the organization and its functioning. Employees at Credit Suisse are very helpful and easily approachable. They are eager to share their knowledge with the interns. The HR department also organizes many speaker sessions where interns get to interact with very senior level employees who share their journey and life experiences. They also organize many leisure activities which help to relax and rejuvenate. Being a Swiss Investment Bank, located in a posh area of Mumbai, all the facilities one would expect are available. There is a high chance of getting a PPO with a decent package at this organization.

Academic courses relevant to the project: Derivatives and Risk Management, Financial Management.

PS-II Station: Credit Suisse - Technology, Pune

Student

Name: Subham Soni (2014A7PS0088H)

Student Write-up

Short Summary of work done during PS-II: In all it was a really good learning experience. If given a chance to work with credit Suisse in future I will do that in a heartbeat. My colleagues were experienced and talented. I learnt a lot from them in my duration of internship there. One question that always bugged was how things are done at a large scale. I think I have an answer now. Overall I would recommend internship at credit Suisse technology.

Tools used (Development tools - H/w, S/w): Maven, Python, Tectia, Pycharm etc.

Objectives of the project: To build a generic validation framework.

Major Learning Outcomes: Learnt a lot of software development principles.

Brief Description of working environment, expectations from the company: The environment provided by credit Suisse was great. Employees there were really talented I learnt so much from them as a part of my internship. I made some really good friends as well. I don't think I could have asked for anything more.

Academic courses relevant to the project: DSA, Software Engineering, Machine learning.

PS-II Station: Credit Suisse - Credit Analytics, Mumbai

Student

Name: Nikita Vasudeva (2016H1490244P)

Student Write-up

Short Summary of work done during PS-II: Worked on FinCrime, OpRisk Dashboard and preparing SP packs for monthly BRCM's. Also worked on projects like Metric Library, APAC Dashboard which helped develop an understanding of the various metrics monitored by GM Controls in order to mitigate operational risks.

Tools used (Development tools - H/w, S/w): MS Excel, PPT, Tableau.

Objectives of the project: Mitigation of Op risk, overcoming weaknesses identified by SAMLP(FinCrime), Reporting of monthly metrics for monthly meetings(BRCM).

Major Learning Outcomes: Learning the working and structure of an investment bank. Working in the Operational risk side helped understand the various measures taken to mitigate the risks. Assisting some team members in building MI/Dashboards, thereby helping in automation.

Brief Description of working environment, expectations from the company: A very employee friendly environment which promoted new ideas for innovations.

Academic courses relevant to the project: CFT, FMA.

Name: Shweta Pandey (2014A3PS0206H)

Student Write-up

Short Summary of work done during PS-II: Worked within the oversight and supervision team of the IB controls division. Work involves performing daily, weekly and monthly activities trying to enforce the FINMA guidelines, trying to control operational risk involved in the front office of an investment bank.

Tools used (Development tools - H/w, S/w): Excel, R.

Objectives of the project: Implementation of operational risk control framework activities.

Major Learning Outcomes: Provided a close insider view of how the front office works and the importance of controlling the operational risk involved in the FO, acquiring the skills needed to enforce the operational risk control framework activities.

Brief Description of working environment, expectations from the company: Credit Suisse provides a healthy, competitive environment to work in. Employees are friendly; work is well-defined and tailored for the interns involved, letting them to learn most of the work involved in the department/team as the internship progresses.

Academic courses relevant to the project: Security Analysis and Portfolio Management, FRAM, DRM.

PS-II Station: DBOI (Deutsche Bank) - Operations, Mumbai

Student

Name: Aditya Chauhan (2013B2A40313P)

Student Write-up

Short Summary of work done during PS-II: I work at Market Risk Analysis and Control Department of DBOI. I work for the Credits Business. My major work includes Risk Validation at the start of the day and also the analysis of trades which are breaching limits of Risk and VaR. I look at the moves in the risk on day on day basis and the underlying assets contributing the most to them. I was additionally associated with the month to month action which is basically an aggregation of the KPIs of every advantage class throughout the month. I likewise set up the PnL situation report which gives a thought of how our benefit and misfortune look if there should be an occurrence of stun knocks. Been a piece of an undertaking including movement of hotspot for Index constituent weights. Additionally, I play out certain report approvals containing affectability numbers for the most recent date (close of business). I also prepare a report to keep a track of the Risk Validation process. We look at various Key Process Indicators, and mark them red and amber if breaching certain threshold. And try not to repeat the same.

Tools used (Development tools - H/w, S/w): SAS, Excel VBA.

Objectives of the project: My major work includes Risk Validation at the start of the day and also the analysis of trades which are breaching limits of Risk and VaR. I look at the moves in the risk on day on day basis and the underlying assets contributing the most to them.

Major Learning Outcomes: Understanding about Risk Management

Brief Description of working environment, expectations from the company: Working environment is okay but especially depends on your team.

Academic courses relevant to the project: DRM, SAPM.

Name: Shesha Verma (2014A4PS0388G)

Student Write-up

Short Summary of work done during PS-II: In DBOI, I was working with DBC - CIB (Corporate and Investment Banking), Risk and PnL reporting team. My work was to create daily risk and PnL reports on the basis of the trading done on the previous business day for the trading book (various trading portfolios) allotted to me in order to provide the trading desk with opening risk and PnL for the next business day. We worked on T+1 basis,(i.e. trading day +1 basis). The various trading books were segregated based on the product type (bonds, bond option, credit default swaps etc.) and on the nature of the trading portfolio (funding book, hedge book etc.). My work also included making sure all the trades are booked correctly (direction of cash flow, making sure trade is not booked twice etc.) and reconciliations between the different systems, right from the trade booking/blotter system to downstream systems from where we send the numbers to trading desks, we basically were a part of the product control team. Overall it was a good learning experience, you get to learn how risk develops on various products, how are these money market product priced and valued, what are the different attributions of the profit/loss, how are these numbers calculated using market curves and how market movements affect these numbers.

Tools used (Development tools - H/w, S/w): MS-Excel and internal Deutsche Bank software's.

Objectives of the project: Risk and PnL reporting on T+1 basis.

Major Learning Outcomes: I got to learn how risk develops on various products, how are these money market product priced and valued, what are the different attributions of the profit/loss, how are these numbers calculated using market curves and how market movements affect these numbers.

Brief Description of working environment, expectations from the company: The working environment was good and we had weekly/bi-weekly trainings, doubt clearing and discussion sessions with our mentors, managers and other members of our team in order to make sure we focus more on learning the concepts rather than the processes. In the risk and PnL team, all of the members are basically creating risk and PnL reports for various trading portfolios(book running). To make sure everyone learns about every product and trading book, and the work doesn't get monotonous, we had bi-weekly rotation of books as well. The mentors were always available and ready to help which made things easier.

Academic courses relevant to the project: Financial management, DRM.

Name: Swapnil Bhattacharya (2014A1PS0684P)

Student Write-up

Short Summary of work done during PS-II: Working on the credit rating of different companies in order to determine the amount of exposure (loan limit) to be given to such companies thereby assessing the credit risk related to the company and protecting the bank's interest in these cases.

Tools used (Development tools - H/w, S/w): Confidential Licensed Software was used. Cannot reveal due to confidentiality.

Objectives of the project: Credit Rating Analysis of Corporates, Banks and Asset Managers.

Major Learning Outcomes: Learned the financial analysis of different companies using licensed software. Learned the methodology and process of writing a credit rating report which is crucial to the bank in order to assess credit risk. Learned the nitty-gritties of corporate life and how to work in such an environment.

Brief Description of working environment, expectations from the company: Working environment was quite good. Team members were quite supportive and co-operative right from the start helping clear all my doubts. Learnt a lot from them and hope to use everything I learnt in the future as well. Expectations from the company on my end was met as I wanted them to give me challenging work which they did gradually and I ended up learning a lot more than expected.

Academic courses relevant to the project: Fundamentals of Finance and Accounting, Financial Management, Securities and Portfolio Analysis.

Name: Kavisha Agrawal (2014A1PS0673P)

Student Write-up

Short Summary of work done during PS-II: I am a part of global credit risk team. Significance of it is: Credit ratings express risk in relative rank order, which is to say they are ordinal measures of credit risk and are not predictive of a specific frequency of default or loss. In particular, ratings do not deal with the risk of a market value loss on a rated security due to changes in interest rates, liquidity and other market considerations. However, in terms of payment obligation on the rated liability, market risk may be

considered to the extent that it influences the ability of an issuer to pay upon a commitment. Ratings nonetheless do not reflect market risk to the extent that they influence the size or other conditionality of the obligation to pay upon a commitment. A credit rating not only determines whether or not a borrower will be approved for a loan, but also the interest rate at which the loan will need to be repaid. Since companies depend on loans for many start-up and other expenses, being denied a loan could spell disaster, and a high interest rate is much more difficult to pay back. Credit ratings also play a large role in a potential buyer's determining whether or not to purchase bonds. A poor credit rating is a risky investment; it indicates a larger probability that the company will not pay off its bonds.

Objectives of the project: Quarterly and Annual Spreading of company financials on system called BARS. Annual rating reports which will determine Probability of Default (PD) of that particular counterparty.

Major Learning Outcomes: It has given me a good opportunity to research and learn about different industries and markets. I also got some key advice from my team members which helped me improve the quality of my reports.

Brief Description of working environment, expectations from the company: The major challenge faced on joining the organization was the cultural difference between campus life and bustling corporate but within few days I was able to manage in new environment and starting adjusting to new life. Coming from a non-finance background, initially I was a little off pace with the work as there was a lot to learn within a short span of time but with hard life and proper guidance I start working quite smoothly and efficiently.

Academic courses relevant to the project: Fundamentals of finance and accounting.

PS-II Station: Deloitte Consulting US India, Hyderabad

Student

Name: Amitesh Soni (2013B2AA0758H)

Student Write-up

Short Summary of work done during PS-II: In the first project I performed smoke and regression testing on the client's web portal and reported bugs. The automated scripts were based on Selenium Web Driver. In the second project I worked in System Integration Testing team to test and validate code builds for letter overhauling on mainframe based system. Both the clients were major players in US Healthcare Sector.

Tools used (Development tools - H/w, S/w): Mainframe, MS Excel.

Objectives of the project: To test the daily code builds by smoke testing, validating the EXRT and PDF files as a part of letter overhauling project.

Major Learning Outcomes: Functional knowledge on US Healthcare system, a brief knowledge on the working of Mainframe.

Brief Description of working environment, expectations from the company: The work environment is amazing, with ultra-modern facilities and amenities. An open workspace that encourages you to even go and talk to senior managers and directors.

Name: Kush Gupta (2014A1PS0884H)

Student Write-up

Short Summary of work done during PS-II: The department that I was allotted was HRT Oracle. The projects that were allotted to us required intermediate knowledge of SQL. Interns from engineering background were allotted technical teams. Initially we were asked to get knowledge about various objects. I worked on creation of a BI report, which involves creating a data model, giving list of values and parameters and then finally preparing a template to get the output. There were many trainings which dealt with the consulting domain also such as e-mail etiquettes, mergers and acquisition. The final assignment after two months was in fast formula domain. The fast formula basically involves creating

a code in order to satisfy some of the clients requirements which cannot be satisfied through BI reports etc. Initially we search for DBIs we need as input parameters. Further if we don't have the given DBI we create a value set, UDT or a lookup. Finally the fast formula is attached to the eligibility profile and the plans compensation cycle is run. The module I worked with were compensation, benefits and absence.

Tools used (Development tools - H/w, S/w): SQL Coding-: Oracle cloud developer

Objectives of the project: The basic objective of the project was to provide HCM support for our client. It involved inbound and outbound interfaces and involved developing objects such as BI reports, HCM extracts and fast formulas.

Major Learning Outcomes: The project that I was allotted was under Mr. Mohit Goyal. The project involved creating fast formula in the absence, compensation and absence module. The learning involved SQL coding, the use of Oracle Instance and using DBIs to create Fast Formula.

Brief Description of working environment, expectations from the company: The work culture in Deloitte is really supportive and promotes talent. There is a culture of Courage which encourages a person to come up with new and innovative ideas. People are really friendly and there is culture of helping people. There are many team outings, business meeting and learning sessions which promotes networking. Other then the routine work there are many trainings related to consulting.

Academic courses relevant to the project: List of relevant courses-: 1) Human Resource Management 2) Strategic Management 3) Introduction to programming 4) Introduction to Economics.

Name: KAPIL DESAI (2014A1PS0812G)

Student Write-up

Short Summary of work done during PS-II: Worked in a division (HRT Oracle) that provides Consulting services to clients related to Oracle suite of products (HCM Cloud). This tool developed by Oracle helps business organization to manage their employee details efficiently. It consists of various modules like Payroll, Benefits, HR, Absence Management, Compensation, Talent Management etc. So, we as consultants, help our clients to implement this product in their business model. Initial training were given about the Global Fusion product, SQL and other Oracle tools that are required to deliver the objects to the clients. The work revolved around writing SQL queries to fetch data from databases

according to the clients requirement and also understanding various business needs of the Global Fusion (HCM Cloud) product. It also included to understand how the HR processes in a company works for example involvement of a 3rd party vendor to manage Payroll details of employees or involvement of a bank to manage the cheque report and other payment details. Other additional high level training offered an understanding of how a big organization like Deloitte pitch the project details including costing and methodology to the clients.

Tools used (Development tools - H/w, S/w): SQL to extract data from Oracle/Client databases, BI Publisher (Business Intelligence Publisher) as a reporting tool, HCM Extracts (tool developed by Oracle to extract data from Oracle/Client databases).

Objectives of the project: The objectives of the project in this division (HRT Oracle) is to help clients (business organization) to implement the tool Global Fusion developed by Oracle into their business processes to manage their employee details effectively. The tool helps the clients to manage employee details from hire to retire. The project involved learning the application of the tool and then implementing it by understanding various requirements of the clients.

Major Learning Outcomes: 1. learnt the applications and implementation of Global Fusion product developed by Oracle. 2. Enhancement of communication skills while interacting and understanding the HR business processes of clients. 3. Experience in using SQL language, BI Publisher and other Oracle in-built tools for extracting and converting client's data.

Brief Description of working environment, expectations from the company: The work culture is very open in the organization, we can directly go and have a talk with even the Senior Manager. The people in the organization are very helpful and approachable. They spend time off their busy schedule to guide and train us to help understand the Oracle related tools. The company has a very flexible time policy and even allows work from home in certain cases. The only thing expected from an employee is that he/she meets the deadlines of the deliverable as it will impact the 3rd party vendors as well as clients. The workload in a project depends on the phase the project is in. Initially there won't be a lot so that we can learn about the tools/product but at certain critical stages, we are sometimes expected to work even on weekends(holiday will be compensated).

Name: Nanduri Sai Sindhuja (2013B1A40874H)

Student Write-up

Short Summary of work done during PS-II: Work done includes transformation of data from the legacy system to the Oracle HCM Cloud to ensure faster and easier processes for the client. I had to work on the Payroll module which is used to process the pay slips for the employees in an organization. In this module, my work was to develop Fast formulas to process the payroll for different employees who fall under different plans like insurance, benefits etc. These fast formulas are developed in SQL and contain Yes/No conditions which help process pay for employees specific to their position, benefit plans etc.

Tools used (Development tools - H/w, S/w): SQL.

Objectives of the project: Implementation of Oracle HCM Cloud for the client's HR Processes.

Major Learning Outcomes: SQL Coding, HR Processes.

Brief Description of working environment, expectations from the company: Deloitte is a Multinational corporation with its presence in over 100 countries. The work environment nurtures you and presents to you challenges which will enhance your quality of deliverable each day. Client interaction helps you develop your communication and presentation skills. Overall, my experience at Deloitte was very helpful to enter the world of corporate.

Name: Harshita Jha (2013B2AA0867H)

Student Write-up

Short Summary of work done during PS-II: Learnt about the US Public Healthcare System and state policies. Under Technology consulting, the service line Systems integration helps client manage the complexity inherent with technology change, from requirements planning to architecture, testing to deployment, and beyond. My team was a part of a larger teams that built the application for a Public-Sector Healthcare project based in the US. The application has been designed to help US state workers in enrolling citizens in various healthcare plans online. We maintain and test the day to day workings of the application through automated Selenium scripts and also run other tests like Regressions. Defects were raised in JIRA, which are later passed to other teams for correction. In depth analysis of certain programs and their eligibility criteria.

Tools used (Development tools - H/w, S/w): Selenium, Excel, SQL.

Objectives of the project: Automation Testing of a US Healthcare and Insurance Application.

Major Learning Outcomes: Automation Framework, US Public Healthcare.

Brief Description of working environment, expectations from the company: Working hours aren't particularly flexible and you must put in at least 9 hours daily. Also, you do not have a say in the project you get allotted as an intern and cannot get it changed. People are friendly and helpful. PPO chances are high, package is low (~5 LPA).

Academic courses relevant to the project: Object Oriented Programming, Database Management System.

Name: Richang Goyal (2014A8PS0776G)

Student Write-up

Short Summary of work done during PS-II: I was a part of HRT Oracle technical team. My work involved creating reports and interfaces for the client. We were implementing Compensation and Performance module for the client in this phase of the project. For Performance, I worked on reports such as Input Providers, Performance Documents, Performance templates, Goals and Goal Plan of employee, Performance ratings, and Employees part of Disciplinary Plan etc. For Compensation, I worked on reports such as Staff Plans, Bonus, Merit, Pay Grade, Promotion and Demotion Statements, Compensation letters, FLSA etc. In all I created around 35 reports and interfaces.

Tools used (Development tools - H/w, S/w): Oracle HCM Cloud, BI Publisher, RTF (using MS Word) and XLS (using MS Excel).

Objectives of the project: To create reports using Oracle BI Publisher reporting tool and interfaces for two modules - Compensation and Performance.

Major Learning Outcomes: SQL, Oracle HCM, BI Publisher tool, Oracle Fusion Integration, Oracle Compensation, Performance and Core HR modules.

Brief Description of working environment, expectations from the company: The work culture is admirable. It's one of the few PS stations where we are mapped onto live projects, with the work we do being actually directly delivered to the clients. Work hours can get hectic sometimes during major

milestones when the deliverable are urgent. In Hyderabad they are gradually shifting to a new office, which is on the lines of "Google Offices" - lively, vibrant and energetic. The food is good, from cuisines ranging from Italian, Chinese, North and South Indian to Subway and Tandoori as well. The people are very busy here, but at the same time very helpful - no one will deny to help you ever. Working here for 5 months teaches a lot of things apart from work - corporate life, networking, taking ownership for the work assigned etc. All in all, it's a good place to work. (PS: if you are looking for a PS station with meager amount of work, then Deloitte is NOT that place.)

Academic courses relevant to the project: I am an Electronics and Instrumentation student, so none of the courses I have learnt were relevant to me for the project.

PS-II Station: DBOI (Deutsche Bank) - Operations, Mumbai

Student

Name: Shashwat Shivam Jha (2014A1PS0728P)

Student Write-up

Short Summary of work done during PS-II: Daily reporting of Risk and P&L on the portfolios of the Emerging Markets(LatAm Region and CEEMEA Region) on a T+1 basis, where T-0 is the day trading takes place. The role requires the knowledge of the market securities, such as Bonds, IR Swaps, CD Swaps, CCY Swaps, Repos, Non-deliverable forwards, etc. It is required to understand the flow of the product through the bank, and the system of valuation of a trade on any product.

Tools used (Development tools - H/w, S/w): MS Excel, Bank's private software's.

Objectives of the project: Daily reporting of Risk and P&L on the portfolios of the Emerging Markets.

Major Learning Outcomes: Trade Valuation, Daily P&L calculations, P&L attributes, Volcker Commentary.

Brief Description of working environment, expectations from the company: Deutsche Bank(Business Finance) offers a learning and nurturing environment to the interns. The interns are given adequate responsibilities and are allowed to contribute to the BAU. The training program is very well-structured and is aimed at giving the candidate a thorough conceptual and practical understanding of the trade support calculations. The work also provides exposure to the trading world.

Academic courses relevant to the project: Derivatives and Risk Management, Security Analysis and Portfolio Management, Financial Engineering.

PS-II Station: Ernst & Young (Advisory Services), Gurgaon

Student

Name: TIWARI ANKUR DEVENDRA (2014A1PS0546P)

Student Write-up

Short Summary of work done during PS-II: Worked on renewables in energy (more specifically, electricity market). Projects were focused on Rooftop Solar Plants. The work was mostly analytics, data collection, simple operations on the data and making reports and presentations.

Tools used (Development tools - H/w, S/w): Microsoft Office (Excel, PowerPoint and Word).

Objectives of the project: Come out with a ranking of all the states based on a few parameters for judgment.

Major Learning Outcomes: Sector Knowledge, Presentation skills, Analytical ability, Consulting experience.

Brief Description of working environment, expectations from the company: Work often starts late, around 10:00 - 10:30 and extends till 7:00. on some odd days, one might have to stay as late as mid night. Although work culture is changing and might be more relaxed in the time to come. Expectations from the company (the manager) differ across projects and in most cases are not very specific.

Name: Ankur Tiwari (2014A1PS0546P)

Student Write-up

Short Summary of work done during PS-II: Worked on three project that can be classified as 'Market Assessment for Rooftop Solar in India', 'Capacity Building Program to enhance Efficiency of an organization' and 'Development of business Models'.

Tools used (Development tools - H/w, S/w): Primarily Microsoft Office (PowerPoint, Excel and Word)

Objectives of the project: Project 1: To gauge the best state in India for investment in Rooftop Solar Space. Project 2: Management Consultancy. Overlook the arrangements for capacity building

workshops. Project 3: Develop commercially feasible business models for net and gross metering of DERs.

Major Learning Outcomes: Soft Skills such as presentation skills, business communication, business etiquette etc. And Sector Knowledge.

Brief Description of working environment, expectations from the company: Working environment is very professional but people are very helpful. Good place to learn and grow as a professional. The work given in first two months is chiefly to enable learning. Outcomes are expected in the later stages. Interns are exposed to client meetings and a high work standard is expected as the role becomes client-facing.

Name: Niharika Agarwal (2014A1PS0486P)

Student Write-up

Short Summary of work done during PS-II: 3 consulting projects were allotted to me, each in the solar sector. The first project was the development of a national index for evaluating the potential for rooftop solar uptake in various Indian states. The second project involved the conduction of capacity building workshops in the North Eastern states of India. The third project involved the development of a financial instrument for the SME sector in India. In addition to this, I was a part of Business Development exercises.

Tools used (Development tools - H/w, S/w): Microsoft Office.

Objectives of the project: Working with the company in ongoing consulting cases.

Major Learning Outcomes: 1. Got a broad understanding of the Rooftop solar segment in India. 2. Understood how business development works in consulting. 3. Participated in building business cases and in executing them.

Brief Description of working environment, expectations from the company: The working environment is very open, friendly and conducive. The team members are very encouraging and guide us all the way through the project. The company expects the work assigned to be completed within the assigned time period, but the deadlines are not very harsh, so, the work is fairly relaxed and teaches stuff.

Academic courses relevant to the project: Principles of Economics, Fundamentals of Finance.

PS-II Station: Fidelity Investments, Bangalore

Student

Name: ANSH SHAH (2013B5A70488P)

Student Write-up

Short Summary of work done during PS-II: Developing a portal to automatically get news from Google after regular intervals of time and then perform sentimental analysis to get the sentiment of the news and then using person company connections in the ever evolving graph with edge weights and nodes(or creating new entities/nodes if they don't exist)accordingly to give an indication of which stock should be sold or bought. For eg. If Elon Musk announces something it can have an impact on Waymo or Uber and thus the machine, after taking in all data, recommends what to sell or buy.

Tools used (Development tools - H/w, S/w): Angular 5, Python, NLP, MongoDB.

Objectives of the project: Make the work of portfolio managers easier and more informative.

Major Learning Outcomes: Got a very good idea of what a full stack developer is supposed to do and got a deeper insight into machine learning.

Brief Description of working environment, expectations from the company: Good working environment and team. Very friendly.

Academic courses relevant to the project: Basic coding skills and knowledge of data structures.

Name: Dhairya Mittal (2013B5A70066P)

Student Write-up

Short Summary of work done during PS-II: Fidelity strives to harness technology in the nascent stages itself and builds upon it to stay ahead of its competitors. Two such technologies that I worked on were, Fully Homomorphic Encryption and Blockchain. My task was to evaluate these technologies by first understanding their core principles and then listing down available frameworks and experimenting with them. The expected outcome of the experiments was to achieve a detailed comparison between the various frameworks allowing us to make an informed decision about the readiness of the technology and the choice of framework.

Tools used (Development tools - H/w, S/w): HElib, SEAL, Ethereum (Geth), Hyperledger Fabric, Corda.

Objectives of the project: To examine and evaluate the emerging technologies for their use in financial services.

Major Learning Outcomes: I got a chance to work hands-on on latest technologies like FHE and Blockchain. Another key takeaway from this internship was the learning that how crucial it is to evolve and update with the constantly changing technological landscape for business viability.

Brief Description of working environment, expectations from the company: The work environment in Fidelity is very relaxed and flexible. As long as the work is being done, hours don't matter. The colleagues are very helpful and supportive. Work from home is not applicable for interns and is a bit of a downside.

Academic courses relevant to the project: Cryptography.

PS-II Station: Frost & Sullivan India Pvt. Ltd., Bangalore

Student

Name: Mohith BN (2016H1490237P)

Student Write-up

Short Summary of work done during PS-II: Frost & Sullivan is one of the major Research firms in the world. The work you do here is primary research and secondary research. You will work as Research analyst which involves making reports through primary and secondary research.

Tools used (Development tools - H/w, S/w): M.S. Office.

Objectives of the project: Making report in the sector specified by client.

Major Learning Outcomes: Primary research and Secondary research.

Brief Description of working environment, expectations from the company: If you want to pursue career in the field of research, Frost & Sullivan is a best place to start. Don't expect a life of IT MNC. No perks expect the monthly stipend you get.

Academic courses relevant to the project: Market Research. Business strategy and Process.

Name: Aakarshi Sharma (2016H1490267P)

Student Write-up

Short Summary of work done during PS-II: Secondary and primary research on digital transformation initiatives in telecommunications industry. Marketing of ICT awards 2018. Maintain excel quarterlies for FY16-18.

Tools used (Development tools - H/w, S/w): Excel.

Objectives of the project: Analysis of digital transformation and marketing of ICT Awards 2018.

Major Learning Outcomes: Trends in AI, Blockchain and which companies are adopting it.

Brief Description of working environment, expectations from the company: Objective was to gather data from syndicated reports and prepare presentation for the same. Environment is initially friendly but too much politics. No orientation provided to interns.

Academic courses relevant to the project: Market Research, Brand management, Marketing, Quant.

PS-II Station: Genpact, Bangalore

Student

Name: Ajitendra Sharma (2016H1490227P)

Student Write-up

Short Summary of work done during PS-II: We worked with Social Media Analytics team doing social listening for brands. We did social media and secondary research for leading Pharma Company in various markets.

Tools used (Development tools - H/w, S/w): PowerPoint.

Objectives of the project: To understand different market objectives.

Major Learning Outcomes: Marketing Research.

Brief Description of working environment, expectations from the company: Our team was very supportive of us during entire internship; we were never treated like intern rather more as part of team. Casual dress and flexible working hours makes very good working culture.

Academic courses relevant to the project: Marketing Research, Consumer Behavior.

Name: SWAGATH KUMAR REDDY.K (2013B1A10662H)

Student Write-up

Short Summary of work done during PS-II: Tracked the payments of ABC Company and created an interactive dashboard on the same. Data Processing, Sanity and Manipulation were done in R programming, dashboard is created in Tableau.

Objectives of the project: Tracking the payments and creating an interactive dashboard for the same.

Major Learning Outcomes: Data processing, Manipulation. Dashboard creation.

Details of papers/patents: No papers or patents.

Brief Description of working environment, expectations from the company: Projects in this company are mainly deals with the clients. Work environment is pretty cool and the employees here has sound

knowledge in the particular domain they are operating and they help us in every way possible. Company expectations lie in line with Client's expectations. So they expect student to be dynamic and he/she should meet the deadlines.

Academic courses relevant to the project: C programming.

Name: Dhawal Tripathi (2016H1490228P)

Student Write-up

Short Summary of work done during PS-II: I was working with a team who have developed a financial IT tool for Pharmaceutical client. This product is developed as an internal tool for FP& A team of Client. This provides a various benefits like easy management reporting, data security, data visualization and data accuracy. Here my role includes validation of Financial KPIs and case study on this product for external client's .Here I have used R programming for developing model for Spend forecasting of raw materials .Along with it I have developed a case study which includes end to end about the details of the product.

Tools used (Development tools - H/w, S/w): R Programming and Advanced Excel.

Objectives of the project: To Validate the financial KPIs and develop a case study on pharmaceuticals FP&A tool.

Major Learning Outcomes: About the financial statements used in Pharmaceuticals Industries, KPIs used in Income statement, case study development for pharmaceutical product.

Details of papers/patents: No papers or patents.

Brief Description of working environment, expectations from the company: Genpact India provides a very friendly environment to Interns .It allows every intern to work on a current project which gives them an opportunity of learning various skills required in business apart from technical. Here everyone supports you to learn more about the present technologies. Top management also gives full support to encourage interns to work in their interested profile. Genpact is full of opportunities for the students who want to develop their career in Analytics.

Academic courses relevant to the project: Corporate finance, Business analysis and valuation.

Name: Maanik Goel (2016H1490271P)

Student Write-up

Short Summary of work done during PS-II: We analyse the consumer data through social media platforms and try to find out solutions to the problems or questions that are faced by the client regarding their product or general scenario or any other business related issue that will impact their business. We use different tools to extract data from the media platforms and analyse it after filtering and sampling it accordingly.

Tools used (Development tools - H/w, S/w): Software tools are used and learnt during the internship.

Objectives of the project: To provide business insight to the client.

Major Learning Outcomes: Relating the concepts of Marketing and market research to design our analysis so that we can generate better insights for the client.

Brief Description of working environment, expectations from the company: Working environment is good as you get flexibility in working hours and the employees are helpful in making you learn the tools and how to do the projects. Apart from that you get to participate in different team outings and get to meet the whole team and get to know more people apart from the ones you are working on a project. What one should expect from the company is that if you work within timelines you will feel no work pressure and you will have a good work life balance.

Academic courses relevant to the project: Marketing, Market Research, MIS.

Name: Sudheesh S (2016H1490224P)

Student Write-up

Short Summary of work done during PS-II: Market research projects for a pharma client using social media data. The aim of the team is to replace primary research with social media research. The conversations regarding the research topic is extracted from various social media platforms like Twitter, Facebook, forums, etc. are extracted for the analysis.

Tools used (Development tools - H/w, S/w): MS Excel, Crimson Hexagon, Radian6.

Objectives of the project: Deliver market research solutions using social media data.

Major Learning Outcomes: social media research, secondary research, brand management, marketing

Brief Description of working environment, expectations from the company: Sound understanding of basic concepts in Marketing management and brand management. Should be good with marketing research and quantitative methods.

Academic courses relevant to the project: Marketing Research, Product and Brand Management, Marketing Management, Quantitative methods.

Name: Pranav Mishra (2012B4A80582G)

Student Write-up

Short Summary of work done during PS-II: Associative rule based machine learning.

Tools used (Development tools - H/w, S/w): Excel, python.

Objectives of the project: Market basket analysis.

Major Learning Outcomes: Associative rule learning.

Brief Description of working environment, expectations from the company: This was a research and development project, the usual work of the company is in making reports using excel. Still the HR will try to accommodate you based on your interests. Work environment consists of making reports based on clients request, company personnel are friendly.

Academic courses relevant to the project: POM, Probability and statistics.

Name: Dhamsaniya Anand Maheshbhai (2013B1A10688G)

Student Write-up

Short Summary of work done during PS-II: The objective of Lytics conversion report is to track product conversions within brands. For this we have created an Excel based interactive report with the features

like: A summary tab which collects inputs such as Time Period (Rolling 3 months, 6 months, 9months, and 12 months), Filter to select a single territory or ALL, Range (lower limit and upper limit) to define switch range. Based on the filters, the report lists all accounts, which had a switch in the brands. FAO conducted two surveys to get response from the department on what team members think of their managers and also how managers rated themselves. The end goal of this project is to highlight any patterns or trends found within the department and hence create a PowerPoint dashboard to analyze survey questionnaire to define themes of questions, Analyse aggregated survey responses and report out patterns or trends, Provide insight of the outcome of the survey on what is going well and what can be done better, Provide contradictions or agreements in responses by individual contributors versus managers, Analyze qualitative questions to identify top keywords or experiences of the responders.

Tools used (Development tools - H/w, S/w): MS Excel, VBA.

Objectives of the project: The project consists of analyzing the surveyed data and sorting it to a level so that some fruitful results can be obtained so as to help the business decide on its strategies and expansions. For the same we use tools like Excel and VBA to sort the date and write code to obtain the expected results. The second project helps management make reforms in the team functioning to make it more efficient and smooth. The inferences help employees and managers understand each other have thought process hence bringing them closer resulting in stronger and better team bonding.

Major Learning Outcomes: I have been able to handle bulk data and am quite confident about playing around with it. Have learnt to smoothly write a code and use various tools in Excel and VBA. There needs to be a course in BITS, which deals with advanced data handling and teaches tools like advanced MS Excel, VBA, R programming etc.

Brief Description of working environment, expectations from the company: Genpact is a professional services firm with key offices in New York City, Palo Alto, London, and Delhi. Genpact was founded in 1997 as a business unit within General Electric. In January 2005, Genpact became an independent company, and by August 2007 was publicly traded. Bain Capital became its largest shareholder in October 2012.

PS-II Station: Goldman Sachs India Pvt. Ltd. - Operations, Bangalore

Student

Name: JAY Gada (2014ABPS0578P)

Student Write-up

Short Summary of work done during PS-II: Business Intelligence and Data Science.

Tools used (Development tools - H/w, S/w): Alteryx and Tableau.

Objectives of the project: Automate process and analyse data.

Major Learning Outcomes: Marketing Research.

Brief Description of working environment, expectations from the company: Automate process which are currently performed manually and bring about change in the working of a few process.

Academic courses relevant to the project: statistics, optimization.

Name: Abhishek Singhvi (2014A4PS0427P)

Student Write-up

Short Summary of work done during PS-II: Data coming into the company is not always accurate. There are inconsistencies, incomplete or incorrect data. Rules are written to flag out such data as errors (called exceptions). These rules are stored in a database currently and there exists a level of similarity and redundancy between such rules. I worked on creating an analytical framework to reduce such redundancies between rules, thus also helping to reduce the overall number of exceptions.

Tools used (Development tools - H/w, S/w): Python, Tableau, Alteryx, R, Aqua Data Studio.

Objectives of the project: Establish rule associations and heuristics. Develop insights into these rules and their exceptions.

Major Learning Outcomes: Learnt programming languages (Python and R), data science techniques and visualization and workflow software.

Brief Description of working environment, expectations from the company: The working environment, culture and the people are very helpful and nice. Long and little odd working hours as you mostly work with people in the west. Projects can be flexible but highly dependent on the department allotted to you.

Academic courses relevant to the project: Machine Learning.

Name: Shashwat Pareek (2013B3A40628G)

Student Write-up

Short Summary of work done during PS-II: Worked on different internal projects related to reconciliation. My main project was to work on increasing the linkage in reconciliation of Listed Derivatives through addition of new rules.

Tools used (Development tools - H/w, S/w): Excel, SQL, Java, Drools, Shell Script.

Objectives of the project: Increase the linkage percentage.

Major Learning Outcomes: Different aspects of SDLC and managing a project in general.

Brief Description of working environment, expectations from the company: Working environment is one of the best with the ownership of the work given to you, this means you can independently work on your project and when you get stuck on something you can always contact anyone in your team and take their help.

Name: Siddhartha Palavajhala (2014A5PS0808H)

Student Write-up

Short Summary of work done during PS-II: I worked in a division called operations; it works as a support division to the revenue generating divisions. The work majorly contained data analysis, which had little or no scope for the courses that are done in Minors in Finance. I was given license for a tool called

Alteryx, it is a data blending tool. I had to use this tool to create workflows that help them in understanding the productivity of the operational functions of my team. The department I worked was is called 'Accounting Services Department' and it doesn't have any work which is related to the finance courses. It is completely a profile for the commerce graduates, which deals with book keeping, balancing sheets and paying bills to the services that are taken by the other Goldman Sachs Employees.

Tools used (Development tools - H/w, S/w): Alteryx

Objectives of the project: To help the company achieve few insights of the operations using data analysis tool - Alteryx

Major Learning Outcomes: data analysis using a tool called Alteryx

Academic courses relevant to the project: completely irrelevant.

Name: Aakash Juneja (2013B3A10549P)

Student Write-up

Short Summary of work done during PS-II: Building a file Reconciliation Tool using R which allows for mapping files, various file ingestions and other generic functionalities.

Tools used (Development tools - H/w, S/w): R, sql

Objectives of the project: Streamline Reconciliations process in the team.

Major Learning Outcomes: R programming

Brief Description of working environment, expectations from the company: Working environment is extremely flat and formal. You would enjoy a true 'Goldman Experience' during the course of this internship.

Academic courses relevant to the project: Database Management System

Name: Saad Ali Soherwordi (2014A4PS0382P)

Student Write-up

Short Summary of work done during PS-II: Worked on multiple projects. Had a week long assignment at the construction site of the new campus of the firm. A lot of opportunities to get global exposure.

Tools used (Development tools - H/w, S/w): MS Office, BI tools

Objectives of the project: To provide recommendation of products based on end-user and stakeholder feedback.

Major Learning Outcomes: Functions and culture of the organization and the division

Brief Description of working environment, expectations from the company: The firm has a great culture which emphasizes on teamwork and consensus. The work is intense but also rewarding.

Name: Vatsal Sanghvi (2013B1A30874G)

Student Write-up

Short Summary of work done during PS-II: I was a part of the Trade Analytics team in the Realty Management Division. The team works on analytics of mortgage loan pools in the securitization market. My work involved documenting various processes of the team, automating a deal tracker using in house OCR reading tools, working on data checks for incoming data and stratification of previous deals.

Tools used (Development tools - H/w, S/w): SQL, R, Aqua Data Studio

Objectives of the project: Documentation of the business and various processes of the team, Automating manual processes and Exposure to stratification and pricing

Major Learning Outcomes: 1. functioning of the mortgages and securitization markets across the worlds. 2. Organizational structure of the Realty Management Division – GS 3. Analytics in the mortgages domain. 4. Importance of effective documentation.

Brief Description of working environment, expectations from the company: Working Environment: Goldman Sachs has a very flat organizational structure which means everyone is approachable. Colleagues are helpful and open to your queries. The firm is very professional in administration and has good infrastructure in place. Expectations: They don't expect you to know everything beforehand even though some knowledge of Finance/Data Sciences is helpful but you're expected to learn during the course of the internship.

Academic courses relevant to the project: Fundamentals of Finance and Accounting.

Name: Siddharth Sen (2014A4PS0364P)

Student Write-up

Short Summary of work done during PS-II: Business Intelligence department. To discover insights from data and solve business problems for different use-cases.

Tools used (Development tools - H/w, S/w): Alteryx, Tableau, SQL, R, Python.

Objectives of the project: Enable transparency and find root causes for business issues

Major Learning Outcomes: Machine Learning, Working with Data.

Brief Description of working environment, expectations from the company: Great work culture and office atmosphere/environment.

Academic courses relevant to the project: Machine Learning, Statistics.

PS-II Station: HDFC Bank, Mumbai

Student

Name: Aakansha Yeole (2016H1490235P)

Student Write-up

Short Summary of work done during PS-II: The purpose of this project is to create a AWB in Personal Loan (PL) for HDFC bank which will be beneficial in providing customer identity i.e. segmentation of customers based on various filters. The project aims of joining one view of the bank's 3 crore liability customers and the policy filters for personal loan which will aid in providing a holistic view for detailed analysis of a customer for personal loan. The analysis of a customer consists of whether the offer for a personal loan was made or not for a particular customer, why that particular offer was made and what criteria can be modified to increase the customer base, etc. which will be beneficial for making business decisions.

Tools used (Development tools - H/w, S/w): MaxIQ, Pentaho, SAS

Objectives of the project: To create AWB for creating one view of customers.

Major Learning Outcomes: Learnt new tools which work on Hadoop platform like Hitachi's Pentaho and MaxIQ which are useful in data integration, visualization and analysis of big data. Understood the code flow for PL before creating its AWB. Comprehended various filters in PL and various checks that should be met before assigning any offer amount and campaign tag to a customer.

PS-II Station: STAR TV, Bangalore

Student

Name: Lakshya Ghuliani (2013B4A70602G)

Student Write-up

Short Summary of work done during PS-II: Multiple projects on recommendations, ad targeting, and customer support.

Tools used (Development tools - H/w, S/w): Python, Pyspark, AWS.

Objectives of the project: Multiple projects on different product aspects.

Major Learning Outcomes: Building ML models, productionizing them.

Details of papers/patents: Paper being written on Model built for ad-targeting.

Brief Description of working environment, expectations from the company: 11-6 core hours, not much pressure of work, they give good time to learn if you don't have previous experience.

Academic courses relevant to the project: Machine Learning, Information Retrieval.

PS-II Station: Goldman Sachs India Pvt. Ltd. - Operations, Bangalore

Student

Name: Abhishek Singh (2016H1030079P)

Student Write-up

Short Summary of work done during PS-II: We developed a novel idea of a correction layer over the automatic speech recognition engine (ASR) to correct erroneously captured alphanumeric sequences. We have often observed that even the most accurate ASR like Google speech to text gets many of our speeches wrong. Most of the time it does not matter as even if small sections of the text is identified wrongly the overall meaning and context doesn't change. But for businesses say like e-commerce offering it's interaction service via speech chat bot, if certain portions of the text like order number or shipment ID is erroneously recognized then the chat bot cannot proceed with the correct response to the user. Hence it is necessary to accurately capture these critical sections like telephone number. pin code, order number etc. During PS-2 we developed methods to solve the problem using novel approaches and filed a patent to protect out intellectual property.

Tools used (Development tools - H/w, S/w): Python, Natural Language processing algorithms.

Objectives of the project: To develop novel algorithms to solve relevant industry problem of accurately capturing speech by an automatic speech recognition engine.

Major Learning Outcomes: Designing natural language processing algorithms.

Details of papers/patents: We filed a patent for our novel method putting forward 3 novelty claims and multiple sub claims.

Brief Description of working environment, expectations from the company: The research opportunity was good in IBM ISL. They gave us problems that were not previously solved; hence we got an opportunity to file a patent. As far as the guidance is concerned, they gave us the full freedom to do the project our own way and device our own methods.

Academic courses relevant to the project: Machine Learning, Information Retrieval.

PS-II Station: Indiamart Intermesh Ltd., Noida

Student

Name: Madhurima Biswas (2016H1490249P)

Student Write-up

Short Summary of work done during PS-II: All the projects which I have undertaken as a part of Ad sales team of IndiaMart, the most important learning for me is how to present your firm in front of others with an impact. When you are meeting a big client, you should know when and what to speak to create a trust factor after which your client has the confidence to rely on you. My leadership quality has evolved drastically as I am involved in taking third parties reviews, I have understood how to make people work and identify that one thing which drives people. It has been a wonderful journey working with so much experienced people in starting of my carrier. After taking up the project of being the Digital Strategy Consultant for advertising division of IndiaMART, I have created a touch base in many media agencies & B2C houses. This has helped me in understanding the art of pitching & how to take it forward for other processes. The execution of campaigns has helped me gain insight for new tools, thus sharpening my software skills and adding a great reflect on my profile.

Tools used (Development tools - H/w, S/w): Mailchimp, Send grid, DSP.

Objectives of the project: 1) Potential client creation. 2) Review of third party employees 3) Digital Consultant for Adsales 4) References from leaders.

Major Learning Outcomes: Negotiation, market research.

Brief Description of working environment, expectations from the company: Company is lively. The sales division of Big brands is highly active. Great atmosphere. Aggressive as well.

Academic courses relevant to the project: Marketing, Ecommerce & Internet marketing, Advertising.

PS-II Station: Indiamart Intermesh Ltd., Noida

Student

Name: Madhurima Biswas (2016H1490249P)

Student Write-up

Short Summary of work done during PS-II: All the projects which I have undertaken as a part of Ad sales team of IndiaMart, the most important learning for me is how to present your firm in front of others with an impact. When you are meeting a big client, you should know when and what to speak to create a trust factor after which your client has the confidence to rely on you. My leadership quality has evolved drastically as I am involved in taking third parties reviews, I have understood how to make people work and identify that one thing which drives people. It has been a wonderful journey working with so much experienced people in starting of my carrier. After taking up the project of being the Digital Strategy Consultant for advertising division of IndiaMART, I have created a touch base in many media agencies & B2C houses. This has helped me in understanding the art of pitching & how to take it forward for other processes. The execution of campaigns has helped me gain insight for new tools, thus sharpening my software skills and adding a great reflect on my profile.

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Brief Description of working environment, expectations from the company: Company is lively. The sales division of Big brands is highly active. Great atmosphere. Aggressive as well.

Academic courses relevant to the project: Marketing, Ecommerce & Internet marketing, Advertising.

PS-II Station: India Mart, Chennai

Student

Name: S.Vijay Narayanan (2016H1490219P)

Student Write-up

Short Summary of work done during PS-II: My work was to shadow in for a business manager in client servicing division of Indiamart and understand the working and business process of the company.

Tools used (Development tools - H/w, S/w): MS Office.

Objectives of the project: To understand the challenges involved in online marketing in current business scenario.

Major Learning Outcomes: Ability to find out client needs and provide required business solution, Team building skills.

Brief Description of working environment, expectations from the company: The working environment was extremely friendly; all managers were knowledgeable and ready to help. They had a through understanding of the current market. I expected more of team handling work than field work but field work helped me in understanding the current market.

Academic courses relevant to the project: Consumer Behavior, Sales and Marketing, Online Marketing.

PS-II Station: InMobi - Supply Chain, Bangalore

Student

Name: Vatsal Garg (2016H1490205P)

Student Write-up

Short Summary of work done during PS-II: In order for Inmobi to stay ahead of its competitors, we the Market Intelligence team provide them Intel to go ahead with so that they can go ahead with it.

Tools used (Development tools - H/w, S/w): Mobbo, Priori data.

Objectives of the project: To help in Inmobi's growth and stay competitive.

Major Learning Outcomes: Better MS Excel skills, Better approach towards secondary and primary research.

Brief Description of working environment, expectations from the company: At Inmobi, the working environment and culture is really amazing as there is so much freedom and we can pitch in whatever idea we have. Company is expected to grow at more and more pace.

Academic courses relevant to the project: Market research.

PS-II Station: JPMC CIB Operations, Mumbai

Student

Name: Saksham Bhatia (2014ABPS0759P)

Student Write-up

Short Summary of work done during PS-II: To improve process efficiency of the team I worked with. I studied, performed and further automated some of the activities done by the team, hence saving FTEs.

Tools used (Development tools - H/w, S/w): Xceptor -web based automation tool.

Objectives of the project: To improve process efficiency using automation.

Major Learning Outcomes: Automation can be used to do repetitive tasks with minimal human intervention.

Brief Description of working environment, expectations from the company: JPMC has a good corporate culture. Interns were allocated different teams to work with. This helped improve professional communication and networking.

Academic courses relevant to the project: Business Communication.

PS-II Station: JPMC CIB Operations, Bangalore

Student

Name: Shibika (2014A4PS0162G)

Student Write-up

Short Summary of work done during PS-II: In order to understand the working of the department, knowledge of the process was obtained by undergoing a formal training process which new employees undergo. Post that, several smaller activities for simplifying were handed over. The project involved an interaction with members of several teams working in the KYC domain, meeting their specific requirements and following up for the suitability of the solutions provided. Along with process improvement, analysis on the functioning and optimization of present JPMC proprietary software was also performed in one of the project. The objective here was to identify the redundancies and report them for further improvement by the technology team.

Tools used (Development tools - H/w, S/w): Microsoft Excel, JPMC proprietary software.

Objectives of the project: Automate the report making processes to reduce the time and errors. Also carry out a detailed analysis of the KYC Quality Check Process.

Major Learning Outcomes: Understanding of how a banking KYC system works, Advanced Knowledge of Excel and Macros.

Brief Description of working environment, expectations from the company: The working environment is very formal and well organized. As interns we get an opportunity to interact with experienced member working in the firm and gain knowledge by reporting directly to the VP or ED in the department. The company works in the operations profile and has a lot of opportunity for improvement through automation.

Name: Pranav Kumar Nema (2014ABPS0766P)

Student Write-up

Short Summary of work done during PS-II: First worked on automation of some of the weekly reports using VBA macros, Then I went through training of the Daily Business as usual for 1.5 weeks. A process

Improvement and workflow analysis project was allotted where I did data collection for the in house software where the work was done and then suggested automation techniques and workflow changes to better the lead time.

Tools used (Development tools - H/w, S/w): In house JPMC software's, MS Excel, VBA.

Objectives of the project: To analyse and improve the given daily process of KYC profiling of a client.

Major Learning Outcomes: General process improvement techniques, Data abstraction.

Brief Description of working environment, expectations from the company: JPMC has a healthy working environment, helpful mentors and all of the colleagues have excellent attitude towards guiding a fresher towards a good career. JPMC expects the interns to be ready for any kind of work and healthy attitude to learn in a hands on approach.

Name: Aman Pratik (2014A4PS0322P)

Student Write-up

Short Summary of work done during PS-II: 1. Figured out the manual touch points in the complete process and came up with the feasible scope of automation. 2. Suggested a technique to automate the checklist used by the team. 3. Reduced checklist points from around 700 to 500. 4. Contributed in the daily Business As Usual work of the team. 5. Got trained on Xceptor. Xceptor is an automation tool used to automate the BAU processes in financial and banking sector. 6. Automated 4 process for the Reconciliation team, namely, Debtor Reporting, FAR Reporting, Balance Justification and Invoicing. 7. Approximate time saved after each of the automation (i) Debtor Reporting - 40 minutes per day (ii) FAR Reporting - 30 minutes per day (iii) Balance Justification - 20 minutes per day (iv) Invoicing - 15 hours per month.

Tools used (Development tools - H/w, S/w): Xceptor, GFAS, Excel.

Objectives of the project: 1. Automation and Process Improvement in Transfer Agency.

Major Learning Outcomes: Understood the Mutual Funds in Detail. Understood the complete transaction of the high volumes of money in the back-end. Understood how the concept of foreign exchange and its relevance and impacts. With the fluctuating work load at times, got a hands-on

experience of multi-tasking in dealing with such large sum of money. Understood the urgent need of the corporate banks to automate the processes to reduce the risk and the cost involved. Learnt a tool Xceptor used to automate BAU processes in banking and financial sector.

Brief Description of working environment, expectations from the company: 1. working environment in the company is very professional. 2. Work timings depends on the region for which a team is working for. 3. There are lots of manual processes which are expected to get automated in near future. 4. For next few years there will be lots of scope for interns in automation. 5. There are very few people from technical/engineering background in the operations team.

Academic courses relevant to the project: Derivatives and Risk Management, Financial Engineering, Security Analysis and Portfolio Management.

PS-II Station: J P Morgan services- Global research Centre (GRC), Mumbai

Student

Name: DEVWRAT VEGAD (2013B3A70681P)

Student Write-up

Short Summary of work done during PS-II: I worked in the US Economic Research team and was involved in daily data release notes assistance and the other regular production help. I was in charge of the forecasting models of the macroeconomic variables and designing and recalibrating the models from time to time. I worked with the Model Review team to stress test our models. I also used machine learning in the forecasting and we devised sophisticated live tracker of GDP growth, Inflation and Payrolls growth for the US.

Tools used (Development tools - H/w, S/w): Eviews, Excel, Python, R, Bloomberg, Haver

Objectives of the project: Assist in the macroeconomic forecasting of US.

Major Learning Outcomes: Econometric Modeling, Research note writing, Application of machine learning to Economics

Brief Description of working environment, expectations from the company: JP Morgan GRC provides a challenging environment to work in as there are high chances that you will be directly working with the onshore teams and will be alone in the team in the office. This means that you need to put in extra efforts to match the expectations of your teams. Although in Equity Research, by its very nature, the work is repetitive as you need to summarize relevant news about your sectors and keep updating the company models, the work is a good learning experience.

Academic courses relevant to the project: Econometrics, Applied Econometrics, Macroeconomics, Machine Learning, Data Mining.

PS-II Station: J P Morgan Services- Global Markets Group (GMG) - (Markets +Risk), Mumbai

Student

Name: Samarth Shah (2014A8PS0432P)

Student Write-up

Short Summary of work done during PS-II: I was a part of the Credit risk Team. My work was to analyse the investments of the Treasury of JP Morgan from a credit risk perspective. This involves reading about the entity in their financial statement and disclosures, and in reports by rating agencies such as S&P, Moody's and Fitch. An intern's focus is mainly limited to analyzing municipal bonds of the US, which are simpler than corporates. These are annual reviews conducted by the team. So mostly, the intern is expected to revise and update last year's report with latest financial data from the annual report, and write a qualitative section highlighting the key aspects of the entity in terms of operation and financial position. Mostly the task requires understanding of financial statements. If anybody happens to know VBA/python coding, they can give you more interesting tasks such as creating a template for their annual review through programming.

Tools used (Development tools - H/w, S/w): MS Office, Bloomberg.

Objectives of the project: To give a credit rating to the investments of the Treasury.

Major Learning Outcomes: Ability to read and infer financial statements, ability to analyse entity's operations and financial position using these financial disclosures.

Brief Description of working environment, expectations from the company: The working environment was very good. People were very supportive and also spent time knowing each other. They will include interns wherever possible and try to help them as much as possible. So good working culture, but intern has to grab opportunities and be upfront in asking for more work because they will not impose strict deadlines and will let you take your time.

Academic courses relevant to the project: Fundamentals of finance and accounting.

PS-II Station: JPMC CIB Operations, Bangalore

Student

Name: Mayank Kumar (2014A4PS0192G)

Student Write-up

Short Summary of work done during PS-II: Automated various recurring BAU process to increase task efficiency along with the reduction of manual errors. The projects were multiple and were typically of short duration.

Tools used (Development tools - H/w, S/w): MS Office, Bloomberg

Objectives of the project: To give a credit rating to the investments of the Treasury.

Major Learning Outcomes: Ability to read and infer financial statements, ability to analyse entity's operations and financial position using these financial disclosures.

Brief Description of working environment, expectations from the company: The working environment was very good. People were very supportive and also spent time knowing each other. They will include interns wherever possible and try to help them as much as possible. So good working culture, but intern has to grab opportunities and be upfront in asking for more work because they will not impose strict deadlines and will let you take your time.

Academic courses relevant to the project: Fundamentals of finance and accounting.

Name: Johaan George Koshy (2014A4PS0223P)

Student Write-up

Short Summary of work done during PS-II: As part of the reporting team of Document Management in Corporate and Investment Banking Operations, I had the task of pulling out reports from the various databases the bank uses, as and when the users require. Business Objects tools like SAP and ERP were commonly used for the purpose. Process Automation and efficiency improvement were also done to reports. This significantly reduced the manual efforts and time taken for the reports to be delivered.

Different Error analysis were also done to identify the mistakes that have occurred due to the manual indexing of documents.

Tools used (Development tools - H/w, S/w): MS Excel, Enterprise Resource Planning, Capture Information System, SAP.

Objectives of the project: To improve the reporting efficiency and accuracy of data that results in better employee performance and client experience.

Major Learning Outcomes: Learning about the corporate culture of one of the biggest banks in the world in itself was an enriching experience. Along with learning hard skills like MS Excel, VBA and business objects, I got the chance to improve on my soft skills due to the constant interaction with other employees on and off the floor.

Brief Description of working environment, expectations from the company: The Company HR Department give much importance to the internship program. We were part of a Corporate Analyst Development Program which the company focuses on fresh graduates to be trained to become full time analysts. The company culture is appreciable as it gives each person to raise their concerns regardless of the hierarchy. The working hours were as per US timings as my team had to work in collaboration with the US counterparts.

Academic courses relevant to the project: Derivatives and Risk Management.

PS-II Station: JPMC CIB Operations, Mumbai

Student

Name: Akshay Chugh (2014A4PS0355G)

Student Write-up

Short Summary of work done during PS-II: Understand client processes, explore automation opportunities, provide annual hours save and reduce key man dependencies.

Tools used (Development tools - H/w, S/w): Xceptor (propriety s/w), Visual Basic for Applications.

Objectives of the project: Process Automation.

Major Learning Outcomes: Good start to the corporate life, managing various stakeholders and efficient problem solving was my learning from this internship.

Brief Description of working environment, expectations from the company: The working environment at JPMC was great. The team was very helpful and supportive. However the work, although interesting, was not very challenging. Having said that, if enough zeal was shown, tougher projects could be found. This is a decent PS station if one has not done any finance course and wants to explore other opportunities.

Name: Rishab Vijay Vargia (2014A1PS0516H)

Student Write-up

Short Summary of work done during PS-II: Automation and robotics have taken all major industries by storm and finance industry is no exception. My work here involved automating various client files so as to reduce human effort and errors.

Tools used (Development tools - H/w, S/w): To avoid any breach of privacy in accordance with the company's policies, I cannot reveal any tools or software or hardware rigs that I've worked on.

Objectives of the project: To reduce the opportunity cost of multiple potential employees.

Major Learning Outcomes: Automation.

Brief Description of working environment, expectations from the company: Our managers and other team members (most of whom were permanent employees) were supportive and made sure that we were part of newer and more engaging projects.

PS-II Station: J P Morgan Services - Quant, Mumbai

Student

Name: Abhishek Tiwari (2014A1PSO491P)

Student Write-up

Short Summary of work done during PS-II: The Counterparty Risk Group oversees and assesses the risks which arise due to the Financial Counterparties with whom the JP Morgan Asset Management does business. The team is based in three locations New York, Hong Kong and Mumbai. The team does annual reviews and performs credit analysis of various counterparties with which the business is involved in various trades. The team also performs account concentrations to assess the exposures and investigate the same. It also collaborates with the Investment Risk Teams for Money Market Funds. The Mumbai Team is the Credit Analysis Unit (CAU). The team is tasked with the Annual Credit reviews of the various FIGs (Banks, Broker-Dealer, and Insurance Firms). Overall it is a financial reporting role and uses JPMorgan's proprietary software's, Tableau, Excel.

Tools used (Development tools - H/w, S/w): MS-Excel, Tableau. (Knowledge of Python is a plus given increasing role of tech in Finance industry).

Objectives of the project: Credit Analysis and Risk Management of Financial Institutional Groups.

Major Learning Outcomes: Financial reporting methods, Learning of Software Tableau, Corporate.

Brief Description of working environment, expectations from the company: JPMorgan is a treat to work at most of the times. Discuss the timings with your manger. Almost all the things depend on your mentor/manager, so make sure to be in his/her good books. it is implicit for you to put in at least 8-9 hours of work daily. They expect you to learn the business as fast as you can (take maximum 1 month to learn 60-70% of the work) and then start delivering. They see you as an future employee and you are given the responsibility and deliver. You are an intern so they will expand. Your PPO depends a lot on your output in the capacity as an intern.

Academic courses relevant to the project: Fundamentals of Finance.

*PS-II Station: J P Morgan Services -Centralized Research Group (CRG),
Mumbai*

Student

Name: Arjun Laxmikant Mahajan (2014A4PS0279G)

Student Write-up

Short Summary of work done during PS-II: Help front-end bankers prepare presentation materials for their meeting with clients.

Tools used (Development tools - H/w, S/w): Excel, PowerPoint.

Objectives of the project: Understand dynamics in real estate market across geographies.

Major Learning Outcomes: Understand dynamics in real estate market across geographies.

Brief Description of working environment, expectations from the company: Everyone in the office is very professional and no one says no or gets angry (even the very senior members) to the silliest of your doubts.

Academic courses relevant to the project: FOFA, FINMAN.

PS-II Station: J P Morgan Services - Quant, Mumbai

Student

Name: Siddhant Dang (2013B1A40263P)

Student Write-up

Short Summary of work done during PS-II: Liquidity risk management: ensuring enough liquidity (cash) reserves to meet obligations in times of economic stress.

Tools used (Development tools - H/w, S/w): MS Excel, Internal tools.

Objectives of the project: Daily risk reporting and management.

Major Learning Outcomes: Financial risk management.

Brief Description of working environment, expectations from the company: Flexible working hours. Helpful and understanding colleagues.

Academic courses relevant to the project: Funda Fin.

Name: Meghana Yerabati (2013A4B30322H)

Student Write-up

Short Summary of work done during PS-II: Helped quantify, monitor and control Interest Rate Risk in the Banking Book to comply with regulatory requirements and for effective firm-wide risk management.

Tools used (Development tools - H/w, S/w): Excel, Python, R.

Objectives of the project: Forecast Deposit Rate of Euro Area using Machine Learning Tools.

Major Learning Outcomes: Better understanding of asset-liability risk management.

Brief Description of working environment, expectations from the company: Working environment - Open meritocratic culture. Expectations - Eager to learn and ability to tackle challenges.

Academic courses relevant to the project: Econometrics, Derivatives and Risk Management.

*PS-II Station: J P Morgan services- Global research Centre (GRC),
Mumbai*

Student

Name: Shubham Khandelwal (2013B3A40685P)

Student Write-up

Short Summary of work done during PS-II: I was in the equity research department of J.P.Morgan. I learnt quite a lot about equity research, although most of the times work given was quite boring, I was just adding data to excel, ppt, etc. but overall there is an unlimited amount knowledge that one can gain at GRC. If one wants to build career in equity research then this is the best place to start with.

Tools used (Development tools - H/w, S/w): Microsoft Excel, Power Point, Word.

Objectives of the project: Equity Research.

Major Learning Outcomes: Equity Research.

Academic courses relevant to the project: Security Analysis and Portfolio Management, Financial Management.

PS-II Station: Morningstar, Mumbai

Student

Name: Vatsal Tiwari (2013B2A10686G)

Student Write-up

Short Summary of work done during PS-II: Index Launches, Client Queries.

Tools used (Development tools - H/w, S/w): of Index Investing and the different types of indices calculated at Morningstar. It also explains what the Index-Operations deals every day-tasks and activities, and what role it plays in the Indexes Team. How the Indexes are calculated and the different components involved in the calculation of the Index, what are the uses of the index.

Objectives of the project: To launch new indexes and keep a track of files for the existing indexes.

Major Learning Outcomes: How indexes are calculated, restatements are done.

Brief Description of working environment, expectations from the company: Working environment is really good with very helpful people all over.

Name: Rushit Sejpal (2016H1490245P)

Student Write-up

Short Summary of work done during PS-II: We are living in a world where tremendous volume of data flows all around us, and at times it's difficult for our clients to make informed decisions for themselves and their clients. As a part of the product management team at Morningstar Indexes, I had to hear what our client needs and then help them with products that are either off-the-shelf (already existing) or create solutions for them by disseminating substance from noise.

Tools used (Development tools - H/w, S/w): SQL (Basic), Python (Basic).

Objectives of the project: Transforming Data into solutions for Morningstar Indexes client.

Major Learning Outcomes: Client Communication, Product Management.

Brief Description of working environment, expectations from the company: Overall Morningstar is a good place to work. Team are helpful over here.

Name: Yashodeep (2014A2PS0542H)

Student Write-up

Short Summary of work done during PS-II: Vendor Differences in Fundamental Data Calculation (for 5 fundamental data points), Index Reconstitutions.

Tools used (Development tools - H/w, S/w): SQL, Excel, Python

Objectives of the project: To summarize differences in data calculation methodology between current and future data vendor, Index Maintenance.

Major Learning Outcomes: Coding in SQL, basic Excel, and Financial concepts related to Indexing.

Brief Description of working environment, expectations from the company: Working environment is very friendly, good place to learn about Indexing, Portfolio Management.

Academic courses relevant to the project: Finance courses.

Name: Chaitanayam (2016H1490241P)

Student Write-up

Short Summary of work done during PS-II: 1. Project Details-I am being assigned to Indexes- New Product Development (NPD) Team and majorly working on the NPD Monthly Data Refresh Process. 2. Project Objectives-To calculate the financial parameters required for Morningstar Indexes by collecting the data provided by various Vendors/Calculation Agents and uploading it on the local server. 3. Methodology-Usage of Python and SQL for extracting different data points required to calculate various financial parameters and finally uploading the data onto the server. 4. Work progress till Mid-Sem-Completed the refresh for the months of December, January and February. Presently, working on the refresh process for the month of March. Designed an SOP and an Internal Wiki-Page with a detailed explanation of the procedure to be followed. 5. Work progress post Mid-Sem-Completed the refresh for

the months of March and April. Presently, working on the refresh process for the month of May. With the retirement of data from a vendor named "Factset", the codes and scripts needed to be changed so that the data from another vendor named "XoI" could be used. Successfully completed the project, which involved the modification of Python and SQL scripts so that the complete process could be made efficient.

Tools used (Development tools - H/w, S/w): The following software's are required for this project-MS SQL Server Management Studio, Spyder (Python), R Studio, Firefox and MS Excel.

Objectives of the project: To calculate the financial parameters required for Morningstar Indexes by collecting the data provided by various Vendors/Calculation Agents and uploading it on the local server.

Major Learning Outcomes: Learnt how to write codes on Python and linking them with SQL Server. Learnt the usage of Python and SQL for extracting different data points required to calculate various financial parameters and finally uploading the data onto the server.

Details of papers/patents: Designed an SOP and an Internal Wiki-Page for the company with a detailed explanation of the procedure to be followed.

Brief Description of working environment, expectations from the company: Great working environment. Helpful team members.

Academic courses relevant to the project: Computer Science Courses related to Python and SQL Language.

Name: NIKHIL TIWARI (2014A1PS0618G)

Student Write-up

Short Summary of work done during PS-II: If you are in Technology Team, they will expect some output from you as early as possible.

Tools used (Development tools - H/w, S/w): C#, Java, SQL Server.

Objectives of the project: No Project.

Major Learning Outcomes: Accountability, Programming Knowledge.

Brief Description of working environment, expectations from the company: It was nice experience working here, work was also good, and PPO depends on budget and requirement of Company.

Academic courses relevant to the project: All Computer Science Courses.

PS-II Station: National Council of Applied Economic Research, Delhi

Student

Name: Pulkit Chaturvedi (2014A4PS0191H)

Student Write-up

Short Summary of work done during PS-II: I was involved with a numerous projects. The first one is the creation of State-Wise Direct Benefits Transfer Readiness Index Project. This project was funded by the Bill and Melinda Gates Foundation and carried out in collaboration with Ministry of Rural Development (MoRD). The objective was to create a state-wise index based on some factors which would inform the government as to how ready the different states are to adopt the DBT scheme. In the process of informing them, we could also throw some light on why some states are ready and why the others are lagging behind and the measures or initiatives to be taken to make the states more DBT ready. A number of public welfare schemes were analysed for the same. I am also a member of the team working on the Mid Term Evaluation of the Model ITI Project. This project is done in collaboration with the Ministry of Entrepreneurship and Skill Development. As a part of this project, we are supposed to carry out field visits to the ITIs and evaluate the progress made after the implementation of the Model ITI scheme so as to inform the government about the challenges and shortcomings in implementing the afore-mentioned policy. I was also involved with the Survey of Business Expectations in India, 2018 project. The aim here was to form a Business Confidence Index across various sectors and analyse the changes in the same over time. Among other projects, I was also involved with the Public Finance Analysis for the Journal of the Quarterly Review of Economy.

Tools used (Development tools - H/w, S/w): Stastical Analysis Software Packages.

Objectives of the project: To calculate the State-Wise Direct Benefits Transfer Readiness Index.

Major Learning Outcomes: Learnt New Statistical Analysis Softwares.

Details of papers/patents: Public Finance Chapter, Quarterly Review of Economy, April 2018. Public Finance Chapter, Quarterly Review of Economy, January 2018. Report on Index of Business Confidence, Survey of Business Expectations in India, May 2018.

Brief Description of working environment, expectations from the company: A friendly atmosphere with very amicable researchers around. They provided us with all kinds of support needed and are also very mindful of the quality of the work and projects taken up by the interns.

Academic courses relevant to the project: Probability and Statistics, Econometrics, Public Policy.

Name: Aviral Singhal (2012B1A20745H)

Student Write-up

Short Summary of work done during PS-II: The work was mainly on the regional tourism Satellite account for all the states of India Phase 2 . There were other work also given apart from the main project which included various administrative work like organization of the various events like C.D. Deshmukh Memorial lecture, Book Launch on Cyber Security and application of IT technology in governance and preparation for India Policy Forum 2018. The main Project work involved data extraction for various government departments and then compiling the data for the preparation of the state profile for all the states of India. The data needs to be processed, analyzed and then visualized to be presented in a format that can be put up in the final report. Report was created for all the states and also there was some elaborate profiles also created for few states according to the requirement.

Tools used (Development tools - H/w, S/w): Tools used for the project are MS excel, Word, Stata, GIS, MATLAB, OCR software.

Objectives of the project: The objective of the project was to collect the data from different authentic Government sources and then using the data make state profiles for all the states and union territories of India which should be in alignment for the state report of the regional tourism satellite account.

Major Learning Outcomes: The Major learning outcome from the works from the PS-2 were, learning about how to prepare professional national level reports and how these projects are carried out and the study is conducted. How to formulate and prepare major reports and their methodology. Also from different administrative works we learned about the working of the organization and how administrative work is carried out. There are various monthly Seminar carried out in the organization in which various Eminent persons give insights to the latest economic developments.

Brief Description of working environment, expectations from the company: We were given a workstation in a proper room with a computer to work on. The working Environment was very conducive for working and also other facilities like canteen and stationary was present to ensure a proper working environment. The staff and the working members of the organization are very friendly, understanding, helping and hardworking. People here are very knowledgeable and learned working and

working with them on different things is definitely a great value addition. There is also Table tennis room and library for recreational purpose. Expectation from the company is that PS students are given a variety of responsibility and work and also they should have a relatively more flexible working hours so that students can work with more efficiency.

Academic courses relevant to the project: The courses that were relevant for the project were, Introduction to geographical information system, technical Report writing, Principles of economics, Engineering Maths.

PS-II Station: Nomura Global Risk, Mumbai

Student

Name: ABHIJEET ROY (2014A2PS0592H)

Student Write-up

Short Summary of work done during PS-II: The main part of the project is to design a dashboard on PowerBI, a business analytics tool for understanding the trends and behavior of certain counterparties which might default and are currently not on the radar to be monitored, thereby helping the analyst to assign an appropriate cash score to the counterparty and hence, avoiding a default risk from the counterparty perspective. Also a part of the project involves building a monitor on the Bloomberg Terminal for various tickers for monitoring the price changes, volatility, std. deviation etc. The main part of internship and also the future permanent job aspect at Nomura involves a waterfall approach based rating system for counterparties based on different financial parameters and understanding the limits setup as per the exposures involved based on industry, sector, operating country etc.

Tools used (Development tools - H/w, S/w): PowerBI, Bloomberg Terminal, MS Excel.

Objectives of the project: 1) To design a Dashboard(Monitor) on the Bloomberg Terminal for monitoring the volatility, price changes news on the various securities(tickers) 2) To Develop a Business Intelligence Tool for the Risk Monitoring process not just from a MI prespective, but also for the analyst to understand the various trends in the risk utilization levels for different obligors.

Major Learning Outcomes: Analytics on financial Data/ Finance industry.

Details of papers/patents: Excellent working environment. Everyone very helpful and supportive. Company wants you to be sincere in your project and help them in their working environment.

Brief Description of working environment, expectations from the company: A friendly atmosphere with very amicable researchers around. They provided us with all kinds of support needed and are also very mindful of the quality of the work and projects taken up by the interns.

Name: Kasi Vishwanth Reddy (2014A2PS0497H)

Student Write-up

Short Summary of work done during PS-II: My work is mostly on SQL, Power BI, Python & VBA.

Tools used (Development tools - H/w, S/w): SQL, Power BI, Python & VBA.

Objectives of the project: Back up of an employee.

Major Learning Outcomes: How to live out in corporate society.

Brief Description of working environment, expectations from the company: Deliver all the work without any errors or delays.

Academic courses relevant to the project: FRAM, DRM.

Name: Rishi Badola (2014A2PS0591P)

Student Write-up

Short Summary of work done during PS-II: I was involved in development of a SharePoint based tool used by the team for Regulatory Attestations. Moreover, we conducted EUC control checks across the entire risk division to mitigate risk across processes. Similar access reviews and checks were a part of the work.

Tools used (Development tools - H/w, S/w): Microsoft SharePoint, SharePoint Designer, MS Excel.

Objectives of the project: To mitigate risk within entire risk management by ensuring tight controls. The team acts as the first line of defence.

Major Learning Outcomes: Enhanced soft skills, Teamwork.

Brief Description of working environment, expectations from the company: Work life balance is really good. People are friendly and supportive. Environment is employee-friendly. You get enough opportunities to work for social causes and participate in other events.

PS-II Station: Nomura Global Markets, Mumbai

Student

Name: Anirudh (2013B3A70644P)

Student Write-up

Short Summary of work done during PS-II: VBA Coding, Risk Advisory of different regions and desks, Central bank Email.

Tools used (Development tools - H/w, S/w): UDW, MS Excel, VBA.

Objectives of the project: TO create risk reports to be sent out to the global heads of regions.

Major Learning Outcomes: Risk Parameters and Greeks.

Brief Description of working environment, expectations from the company: The work environment is very congenial and helpful. Nomura is a great place to work given the right manager. The team gives good exposure with finance related topics.

Academic courses relevant to the project: SAPM, DRM, FinE, BAV.

Name: Shivam Rathi (2014A4PS0227G)

Student Write-up

Short Summary of work done during PS-II: 1. Automation of monthly report booklet using VBA macros. 2. Pricing of structured rate derivative products for Hong Kong and Taiwan. 3. Handling daily business requirement for the team on ad hoc basis.

Tools used (Development tools - H/w, S/w): MS Excel, Nomura proprietary software.

Objectives of the project: To use automation in order to increase efficiency of report generation. It uses raw data and generates grammatically correct sentences.

Major Learning Outcomes: Finance, MS Excel.

Brief Description of working environment, expectations from the company: The Working environment is great. Teammates are very supportive. But working hours are long. Company expects interns to learn on the go and handle daily business competently. Also finance basics are a must.

Academic courses relevant to the project: Derivatives and risk management Fundamentals of finance and accounting.

Name: Nimisha Agrawal (2014A8PSO437H)

Student Write-up

Short Summary of work done during PS-II: Performing contractual and non-contractual review of structured equity products traded across all regions.

Tools used (Development tools - H/w, S/w): Excel: VBA, Macros; Nomura proprietary software.

Objectives of the project: Complete review of trades on a day-to-day basis.

Major Learning Outcomes: Understanding structured products and the complete trading process; Excel; Corporate interaction.

Brief Description of working environment, expectations from the company: The working environment is very calm and friendly; You are encouraged to ask questions and there isn't spoon-feeding; Ample facilities are provided to employees namely transport, subsidized food, etc.; Hierarchy is not felt

Academic courses relevant to the project: Derivatives and Risk Management; Business Analysis and Valuation; Security Analysis and Portfolio Management; Financial Management; Fundamentals of Finance and Accounting.

Name: Zamin Ali Amir Salman (2014A1PSO542G)

Student Write-up

Short Summary of work done during PS-II: I was a part of the Equity Structuring team at Nomura Global Markets. My team was responsible for pricing custom made financial products like Notes, Swaps and Options use equity underlyings. The work involves complete understanding of fundamental concepts of

how derivatives like call and put option work and combining them to obtain more complicated structures which are traded over the counter. Huge learning curve and the price you quote is directly traded, so mistakes are costly and makes this a high pressure job.

Tools used (Development tools - H/w, S/w): Slide Application, Bloomberg, VBA Scripting and Euclid.

Objectives of the project: Many small projects which are derived as a result of Business As Usual activities. Major projects included automating the pricings many existing structures, using script to send emails and reports automatically at scheduled times, automating the termsheet (a legal document printed to confirm trades and automate the generation of this document based on the pricings) , etc.

Major Learning Outcomes: Good grasp on derivatives, Notes, Swaps and options, VBA Scripting and time and pressure management (very important in this job).

Brief Description of working environment, expectations from the company: Higher chances of PPO in Second Semester, expect long working hours and high pressure environment due to short deadlines

Academic courses relevant to the project: DRM.

PS-II Station: Nomura Global Finance, Mumbai

Student

Name: Milind Rastogi (2014ABPS0868P)

Student Write-up

Short Summary of work done during PS-II: I am a part of the Product Control Department of Nomura's Finance Division. Having business across four regions of the world namely AEJ (Asia Ex Japan), US, EMEA (Europe, Middle East and Africa) and Japan, I was inducted in the Hong Kong region team of AEJ sub-department. Mine is a routine work of preparing the profit and loss statements for the Hong Kong Equity and Derivatives trading desk along with my team members. There are various steps in which a particular statement for a particular strategy is prepared. We regularly remain in touch with our HK counterparts who review our statements. There are various front office and back office softwares used for data collection and matching purpose. We perform the accounting reconciliations between these systems and look for significant mis-matches in the system. Also there are weekly and monthly account checks for which the related statements need to be prepared. Throughout the internship, it has been a great learning experience both in terms of corporate work and corporate environment. I also participated in a sustained CSR activity from Nomura's side for which I garnered special appreciation.

Tools used (Development tools - H/w, S/w): MS Excel and other company specific accounting and trading softwares.

Objectives of the project: To prepare the profit and loss statements for the Hong Kong Equity and Derivatives trading desk.

Major Learning Outcomes: Accounting for executed trades, Working on Excel, Understanding various accounting softwares.

Brief Description of working environment, expectations from the company: Throughout the internship, it has been a great learning experience both in terms of corporate work and corporate environment. I duly shared the normal working of the team. I function as a normal employee with no distinction in work. The work nature is routine and may seem monotonous but I regularly changed my learning priorities and my team members were fully supportive of that. They constantly made me learn new things and face new challenges. My manager also helped me in mixing up with all the vernacular people. Impressed by my performance, they also asked me for a three month extension. As per the expectations

part, I didn't approach the company for the PPO as I would be helping my father in setting up our textile industry.

Academic courses relevant to the project: Fundamentals of Finance and Accounting.

PS-II Station: PricewaterhouseCoopers (PWC), Gurgaon

Student

Name: Arnav Kundra (2014A3PS0240P)

Student Write-up

Short Summary of work done during PS-II: The project revolved around the independent review of energy audit for financial year 2015-16, basically all subdivision offices in Rural Rajasthan had to be visited, data collected from them, and an independent figure for the aggregate technical and commercial loss was supposed to be calculated. We were supposed to understand different consumers within the state, and unify different data formats into a usable source. There was heavy travelling, and quite a lot of excel calculation.

Tools used (Development tools - H/w, S/w): Primarily Microsoft Office (Excel, Powerpoint, Word).

Objectives of the project: The objective was to independently review the energy audit for financial year 2015-16 for Rajasthan.

Major Learning Outcomes: Understanding of energy distribution sector, several regulations of Rajasthan electricity board, excel modeling.

Academic courses relevant to the project: Power Systems, Technical Report Writing.

Name: SHIVAM MAHAJAN (2012B4A20702H)

Student Write-up

Short Summary of work done during PS-II: The project is titled "Preparation of Techno-Economic Feasibility Report for the development of a Greenfield airport near Jewar". PwC india, won the bid for the project on 18Th December 2017 and since then, my team has been working on the same. When I joined the organization as a trainee, I was explained the requirements of the project and have since then worked with the team for the successful delivery of the project in the prescribed timelines. The Government of Uttar Pradesh has envisaged the development of a green field airport at Jewar. The mandate for the project is assigned to Yamuna Expressway Industrial Development Authority (YEIDA, our "Client").

Tools used (Development tools - H/w, S/w): Microsoft Excel, Power Point, STATA, Fuzzy logic.

Objectives of the project: The objective of the project is to provide a detailed Techno-Economic Feasibility Report. The study would help in the development of a world class airport near Jewar (Greater Noida) and help realize several objectives of the government: Firstly, it would help connect several districts of Uttar Pradesh to world's aviation network. Secondly, it would provide boost to tourism and thirdly, the proposed airport will help in decongestion of IGI Airport in Delhi.

Major Learning Outcomes: The project has helped me learn the various constituents of a business model. Learning the constituents of such a model and understanding the major variables and methods of analysis from the very basic to the most advanced concepts will help me to be industry ready.

Brief Description of working environment, expectations from the company: The project is my first experience in working for an MNC, I am fortunate to be a part of a team which is bound by tough deadlines as it is helping me to be responsible and efficient at the same time. My mentors in the company have constantly guided me by providing helpful advice. The team has provided me the exposure to various practices of the company. The expectations with which I joined the organization have truly been met.

Academic courses relevant to the project: Various courses provided at BITS Pilani had helped me during my current tenure. These are: Probability and Statistics, Mathematics III, Discrete Mathematics, Fuzzy Logic, Algebra II, etc.

Name: Kaustubh Tiwari (2013B1A30780G)

Student Write-up

Short Summary of work done during PS-II: Energy Sector consulting specifically related to electronic appliances and transport sector.

Tools used (Development tools - H/w, S/w): MS-Office, MS-Excel, MS-Word, MS-PPT.

Objectives of the project: The work involves working with big clients such as the governments of certain South East Asian nations, EU and energy agency of India. The consulting process involves strategy designing, process designing, implementation and impact assessment. The work is basically related to the GRID (Government reforms and Infra Development) sector, particularly Energy.

Major Learning Outcomes: 1. How to work with a client. 2. Business development strategies. Impact assessment. 3. How to submit, assess and formulate a tender.

Brief Description of working environment, expectations from the company: 1. It is expected to generate your own ideas very frequent. 2. You are expected to cooperate with the client (as far as the meetings are concerned).

Academic courses relevant to the project: 1. Technical report writing 2. Business Communication. 3. Knowledge about electrical and electronics (basic). 4. FOFA (absolutely Okay if you don't have knowledge about this subject. You'll learn everything over here.)

PS-II Station: Credit Suisse - Credit Analytics, Mumbai

Student

Name: NITESH KUMAR JAKHAR (2013B3AB0578P)

Student Write-up

Short Summary of work done during PS-II: Business as Usual type of work. No projects given apart from a small one which mainly included documenting how different securities are set-up in CS collaborated systems for pricing and VAR calculation.

Tools used (Development tools - H/w, S/w): Imagine software, Excel, Tableau.

Objectives of the project: Good opportunity to apply whatever theoretical knowledge gathered to the real world in a practical sense.

Major Learning Outcomes: Understanding of energy distribution sector, several regulations of Rajasthan electricity board, excel modeling.

Brief Description of working environment, expectations from the company: Depends on the how much willing a person is to learn new things. If you are really interested then it's a nice place to be at.

Academic courses relevant to the project: Security analysis and portfolio management, Derivative and risk management, Financial engineering.

PS-II Station: PriceWaterHouseCoopers, Kolkata

Student

Name: YERRAMILLI VENKATA MARUTHI RAMSAI (2016H1440029P)

Student Write-up

Short Summary of work done during PS-II: Preparation of feasibility study on Industrial infrastructure in Bangladesh and Madagascar.

Tools used (Development tools - H/w, S/w): Excel.

Objectives of the project: Providing optimal feasibility study to the client.

Major Learning Outcomes: Analytic and management abilities.

Brief Description of working environment, expectations from the company: The company of has good environment. A bit more of ethics in employing candidates rather than on recommendation would be appreciated.

Academic courses relevant to the project: Infrastructure management.

PS-II Station: PricewaterhouseCoopers (PWC), Mumbai

Student

Name: Richa Priyadarshi (2014A2PS0793P)

Student Write-up

Short Summary of work done during PS-II: Project 1- A framework to benchmark the trucking sector for performance of the sector at national and global level, identify the inefficiencies and gaps is proposed. Firstly, the countries should be divided based on segmentation criteria, income group (upper, middle-upper, middle-lower, lower and fragile) and haul length (short and long) for comparison within the segmentation. The most suitable performance drivers and indicators that will capture the complete picture of trucking sector are operational efficiency (tonne-km/truck/year), environmental impact (energy consumed/tonne-km) and quality of services (consumer perception index). Project 2- The aim of the second project is to thoroughly analyse the current and future features of ports of India to find the most potential east coast port that can be developed. The importance of waterways in India is discussed which can reduce the logistics cost significantly. Initially, the container traffic is forecasted using GDP trend, population trend and throughput at ports to calculate the expected traffic using Microsoft Excel. Later, parametric study of ports is done to rank the ports according to different parameters like port infrastructure, industrial clusters, land availability, management etc. After the investigation it is found that Krishnapatnam port is the most potential port that should be further developed for handling about 17 million traffic in 2025.

Tools used (Development tools - H/w, S/w): Microsoft excel, Microsoft PowerPoint.

Objectives of the project: Propose a framework for benchmarking the trucking sector and analyse the future prospective of ports on eastern coast of India.

Major Learning Outcomes: *Written communication improved as a result of report writing, professional email writing for joint ventures. *Making professional presentations for the bid development of projects. *Enhance thought process after series of discussions with the team members. *Use excel for forecasting tools, optimization for cost-benefit analysis.

Details of papers/patents: A white paper to be published.

Brief Description of working environment, expectations from the company: The working environment is very flexible and friendly. The supervisor and team is understanding and teaches about the project

from the very basics. Ample amount of opportunities are found to be involved in the active projects in form of discussions, bid developments etc. Great professional training in terms of personality and professionalism of work is expected out of the company.

Academic courses relevant to the project: Numerical Analysis, Principle of Economics, Optimization.

PS-II Station: Sattva Media & Consulting Pvt Ltd, Bangalore

Student

Name: Jacob John (2014A4PS0272G)

Student Write-up

Short Summary of work done during PS-II: I was working with the implementation team in the earlier part of my PS. Here I used to do basic consulting and operations work where I had to do various research, research and PowerPoint work. In the latter part, I was with the Executive Search team, where I was involved in the internal hiring of the team.

Tools used (Development tools - H/w, S/w): Excel, Powerpoint.

Objectives of the project: To help the underprivileged women working in the lower retail sector.

Major Learning Outcomes: Secondary research and social consulting.

Brief Description of working environment, expectations from the company: Very good work environment but a lot of work.

Name: Maaz Shariq (2016H1490226P)

Student Write-up

Short Summary of work done during PS-II: Worked with the Monitoring & Evaluation Team for the impact assessment of various projects for clients like Dell, L&T, magicbus, Axis Bank, etc. The work mainly involved the primary and secondary research, formulating a methodology, field visits & data collections and working on deliverable.

Tools used (Development tools - H/w, S/w): MS Excel, KNO Portal (Sattva) and various 3rd party online available tools for survey and data collection.

Objectives of the project: To know how efficient a particular CSR program is running and whether the beneficiaries are actually getting benefit from it or not.

Major Learning Outcomes: Field Visits, Networking, Enhanced Excel skills, consulting skills and knowledge research.

Brief Description of working environment, expectations from the company: Now it varies from person to person. I prefer a little formality and discipline, things properly structured and organized. However the environment at Sattva is a bit flexible, much flexible i would say, much more than what is required to work peacefully without any distractions. No doubt people are working really very hard and passionate enough to get things done. But there is no work space discipline and the culture is that of a typical startup.

Academic courses relevant to the project: Business & Society, Marketing, Branding and Economics.

PS-II Station: State Street Global Advisors, Bangalore

Student

Name: Aditya Patil (2013B3A40598G)

Student Write-up

Short Summary of work done during PS-II: Investment Analysis.

Tools used (Development tools - H/w, S/w): BarraOne, Bloomberg, Factset, Morningtar, Matlab.

Objectives of the project: Investment Analysis.

Major Learning Outcomes: Financial Markets.

Brief Description of working environment, expectations from the company: Good working environment.

Academic courses relevant to the project: All eco courses.

PS-II Station: Supply Basics - Business, Bangalore

Student

Name: Bhavya Joshi (2016H1490199P)

Student Write-up

Short Summary of work done during PS-II: My project is to increase the business volume of the firm which includes lead generation of potential customers, meeting them and getting requirements from them. In all, to increase the revenue of the organization meanwhile also handling the sales operation part for the firm.

Tools used (Development tools - H/w, S/w): Excel, Zoho CRM package.

Objectives of the project: To increase the business volume of the firm.

Major Learning Outcomes: Client acquisition techniques, working of sales cycle, coordination among different teams.

Brief Description of working environment, expectations from the company: Working environment is very much relaxed with giving freedom to interns to choose from the projects available. This is a start-up, they don't have that man power to train someone for the respective field. If someone is seriously interested in sales than only he. She should enter this station; otherwise it is not worth it.

Academic courses relevant to the project: Market research, Supply chain management, Marketing, Operations Management.

Name: Siddharth Potlia (2016H1490231P)

Student Write-up

Short Summary of work done during PS-II: My project is to increase the business volume of the firm which includes lead generation of potential customers, meeting them and getting requirements from them. In all, to increase the revenue of the organization meanwhile also handling the sales operation part for the firm.

Tools used (Development tools - H/w, S/w): Excel, Zoho CRM package.

Objectives of the project: To increase the business volume of the firm.

Major Learning Outcomes: Client acquisition techniques, working of sales cycle, coordination among different teams.

Brief Description of working environment, expectations from the company: Working environment is very much relaxed with giving freedom to interns to choose from the projects available. This is a start-up, they don't have that man power to train someone for the respective field. If someone is seriously interested in sales than only he. She should enter this station, otherwise it is not worth it.

Academic courses relevant to the project: Market research, Supply chain management, Marketing, Operations Management.

Name: siddharth sharma (2016h1490248p)

Student Write-up

Short Summary of work done during PS-II: A CSM acts as a bridge between the customer and the company. Customer requirement is assessed in order to provide products tailored specifically for their needs. Supplybasics has an e-commerce website having a plethora of products listed for various indirect industry purposes. Several online order inquiries or RFQs (Request for quotes) come in from new/existing customers. These need to be further processed and analyzed to ensure a cordial client-company relationship. My project, Customer success management deals with handling these RFQs and further ensuring their timely processing and fulfillment. It involves accessing the chat platform on the website and converting client requirements into item quotes thereby increasing sales volumes and retaining customers by providing best possible service.

Tools used (Development tools - H/w, S/w): MS-Excel.

Objectives of the project: Major objective was to interact with customers, assess their requirements fully and provide them services with shortest possible lead time.

Major Learning Outcomes: Customer Success Management has become an integral part of any company. With increased competition and competitive prices it is very difficult to retain customers and keep them loyal. Hence, to keep the customers in your court effective implementation of CSM is highly

needed. This also improves understanding of client perspective and providing them with the right product.

Brief Description of working environment, expectations from the company: The work environment at Supplybasics is quite friendly and inspiring. It provides a platform conducive to learning new skills and honing the existing ones. The mentors provided were highly enthusiastic and worked closely with the interns that further instilled a sense of confidence. It was all fun working here wherein learning happened at a fast pace.

Academic courses relevant to the project: Marketing research, Marketing.

Name: Akhila Devabhaktuni (2013B2A80941G)

Student Write-up

Short Summary of work done during PS-II: Native application development.

Tools used (Development tools - H/w, S/w): HTML, android studi, JS, SQL.

Objectives of the project: App development.

Major Learning Outcomes: Android.

Brief Description of working environment, expectations from the company: People are helpful and friendly.

Academic courses relevant to the project: Computer Science.

Name: Rohtash Singh Rathore (2016H1490252P)

Student Write-up

Short Summary of work done during PS-II: SupplyBasics is an e-commerce B2B company that takes care of indirect procurement needs of industrial supplies of other companies. Since it is a start-up, new products and categories are added regularly and hence the existing ones are in constant need of improvement and updating. My project deals with the market study, assortment of needs, the suppliers,

and creating pricing strategies to get the products at good price. The project also entails usage of tools such as Microsoft Access and Microsoft Excel. It also dealt in the assessment of last-mile delivery inefficiencies.

Tools used (Development tools - H/w, S/w): Microsoft Excel & Microsoft Access.

Objectives of the project: Category Research With Focus On Light Engineering Sector & Last-Mile Delivery Analysis For The E-Com Sector.

Major Learning Outcomes: Industry analysis, SCM Analysis, working of e-commerce.

Brief Description of working environment, expectations from the company: SupplyBasics Pvt. Ltd. has a friendly working environment. The interns are given the freedom to choose projects of their liking. In the expectations I'd say that, if the company decides to take interns from BITS, it needs to make sure that the level of projects given to choose require tougher skillsets, and a broader learning outcome, so that the intern isn't left bored and uninterested to work.

Academic courses relevant to the project: Marketing research & Supply chain management.

Name: Bishal Praharaj (2014A4PS0198P)

Student Write-up

Short Summary of work done during PS-II: Worked on Category Research and Management and also on Digital Marketing. Learnt how to manage categories in the sense that how products are divided into categories and how these categories are decided. Learnt how suppliers are selected for products and the pricing strategy. In digital marketing, I learnt Google AdWords and how to use it to further campaigns and employ search engine marketing for products.

Tools used (Development tools - H/w, S/w): Microsoft Excel, Google AdWords.

Objectives of the project: To learn how to manage individual categories and market them using digital marketing.

Major Learning Outcomes: Learnt how to create and manage important categories and how their marketing is done.

Brief Description of working environment, expectations from the company: Working environment is very friendly. People here are helpful and approachable including the founders and senior managers themselves. Being a startup the learning opportunities are immense and they expect each and every person to bring something new to the team and the company. They expect you to work on the project you take up and you are also free to take up pending/new projects if you wish to.

Academic courses relevant to the project: Supply Chain Management, Production Planning and Control.

PS-II Station: Viacom18 Media Pvt. Ltd - Corporate Strategy, Mumbai

Student

Name: Shruti Jha (2014A1PS0508H)

Student Write-up

Short Summary of work done during PS-II: Worked on various case studies related to television viewership and solved them by performing exhaustive diagnostics. Used various software and tools like BARC Media Workstation, MARGe etc to gather the data for analyses.

Tools used (Development tools - H/w, S/w): BARC Media Workstation, MAFRAS Analysis Report Generator, BroadView, Power BI, and Microsoft Excel

Objectives of the project: To gather viewership data of television industry, analyze it to understand the TV viewing habits of people, and to develop strategies to improve the performance of our programs and channels.

Major Learning Outcomes: Learnt how to use BARC Media Workstation, MARGe, BroadView, Power BI. Learnt how to solve perform exhaustive diagnostics to solve any problem statements.

Brief Description of working environment, expectations from the company: Friendly work environment, with not so strict timings. Helpful team members.

Academic courses relevant to the project: No courses as such because the work here is specific to media industry but knowledge of various analytics tools can be helpful.

Name: Jain Prachi (2013B3A30530P)

Student Write-up

Short Summary of work done during PS-II: I got the opportunity to understand the interior functioning of a media company. I learnt about the various metrics used to gauge the success of a show or a channel. I familiarized myself with the use of BARC software for data extraction. I worked on comparing ratings and drawing inferences from daily monthly or yearly data. The most interesting part of my work was assisting in designing an optimization tool to predict the most appropriate break patterns to reduce the drop in viewership during breaks. I worked on automating certain analyses done in Excel by writing

the required code in R Studio. Another aspect of work was validating the optimization tools and analyzing their efficiency. I made use of different types of reports generated from BARC and those generated from the optimization tool to figure out where the prediction was accurate and where there was scope for improvement. I made use of R Studio and MS Excel for viewing and analyzing data. All things considered, it was a good learning experience for a beginner in data analytics.

Tools used (Development tools - H/w, S/w): MS Excel, R Studio

Objectives of the project: Optimization of break patterns to increase viewership even during advertisements; validation of prediction tool.

Major Learning Outcomes: Learnt the entire process from data exploration to predictive modelling for an optimization task. Also, learnt how to use R Studio.

Brief Description of working environment, expectations from the company: Working environment is relaxed, you're expected to come in by 10:30 AM and you can leave around 6:30 PM if work is done. If required, one has to stay back late or come on weekends, although that is a rare occurrence.

Academic courses relevant to the project: Econometrics.

PS-II Station: Viacom18 Media Pvt. Ltd - Corporate Strategy, Mumbai

Student

Name: Shivangi Pancholi (2014A1PS0574G)

Student Write-up

Short Summary of work done during PS-II: For the past five and a half months, I have assisted my mentor in several projects. I will mention the most important one in this report. The project deals with using sentiment analysis to determine how Voot is performing in comparison to other OTT platforms. Analytics is now extensively used in the M&E sector as it helps in identifying areas of improvement and provides customized solutions. To ensure that we stay ahead of our competition, Voot has partnered with a Simplify360 to develop an algorithm / dashboard to analyze sentiment data of the customers. Simplify360 is a leading social customer service platform. This platform is widely used by digital media agencies for social listening, reporting and engagement. It helps Voot to understand what its customers are talking about and this thus helps in determining what can be done in order to further improve the performance of Voot and engage more customers. The dashboard also has information about other OTT platforms such as Hotstar and Netflix. Voot is now also planning to make brand content as this a very effective way of marketing for both the advertisers as well as Voot. This project is in its initial stage now.

Tools used (Development tools - H/w, S/w): Simplify360 , Mixed Panel

Objectives of the project: To evaluate the performance of Voot (Viacom's VOD Platform) and develop strategies to further improve its performance.

Major Learning Outcomes: 1. How Brand Integration is an important marketing technique. 2. Learnt how to use the Metric Dashboard, Simplify.

Brief Description of working environment, expectations from the company: The Working environment at Viacom18 is very friendly. My mentors are very helpful and my overall experience here has been very good.

Academic courses relevant to the project: Marketing Research.

Name: Hrithik Piyush (2014A8PS0474P)

Student Write-up

Short Summary of work done during PS-II: Worked on analytics of VOOT, the OTT platform of Viacom18. Mostly worked on Mixpanel, the analytics platform. Worked on user retention of VOOT Kids and developed strategies to focus on improving user retention. Built a website for VOOTATHON, a hackathon event conducted by VOOT.

Tools used (Development tools - H/w, S/w): Mixpanel, Excel, BARC

Objectives of the project: Improving User Retention on VOOT Kids

Major Learning Outcomes: Understood the business side of the picture, how data drives sales. Learnt some web technologies like Angular, Bootstrap, Node.

Brief Description of working environment, expectations from the company: Good work culture, a media company so no strict rules. Not to expect a lot, mainly work is on analytics.

Name: Ayush Rastogi (2016H1490203P)

Student Write-up

Short Summary of work done during PS-II: As a part of Growth and Innovation team, I have been working on market research of companies which can be prospective advertisers for VOOT. Marketing strategy and target market are the main focus areas of my research. Till now the companies I have researched are Oppo mobiles, Blue Star, Mobike, HUL, CavinKare etc.

Tools used (Development tools - H/w, S/w): Mixpanel Analytics, BARC, MS Excel

Objectives of the project: Research Driven Advertisers Insights for VOOT

Major Learning Outcomes: How to perform Market Research, How to prepare post evaluation reports for advertisers and how to work on Mixpanel Analytics and BARC for data pulling

Brief Description of working environment, expectations from the company: The working environment is good. There is no such time restrictions and work stress. The company expects that you can work on MS Excel and MS Powerpoint

Academic courses relevant to the project: Marketing Research

Name: Yogini Naik (2016H1030067P)

Student Write-up

Short Summary of work done during PS-II: Handling Data Management Platform which is central repository for digital advertising and audience formation. Creating automation software for DMP and market research on OTT platforms.

Tools used (Development tools - H/w, S/w): RStudio, DMP

Objectives of the project: Automation software for Data Management Platform and understanding of software.

Major Learning Outcomes: Learning R programming language, Data Management Platform, OTT industry.

Brief Description of working environment, expectations from the company: The working environment is employee friendly with open interaction. The company has huge potential in terms of product development of Voot and integration of more content in Voot app.

Academic courses relevant to the project: Machine learning, software programming.

Name: SHREYESH D (2014A3PS0089P)

Student Write-up

Short Summary of work done during PS-II: I work on two fronts-On the Viewer's Front. Analyze viewing patterns of top viewers and shows that are being most sought after. Help content team to understand which shows are working and which are not. Help content team confirm whether their intended demographic segments of the audience. On the Advertiser's Front. Handle data requests from the advertiser to provide them with a metric to understand the effectiveness of their ad campaign. Help prospective advertisers with probable shows to advertise. Plan for long term advertisers using BARC data for demographic analysis.

Tools used (Development tools - H/w, S/w): Mixpanel- In house analytics tool used for all data on the platform. BMW- BARC powered tool used for data analysis of viewership of all television channels

Objectives of the project: Big data technologies along with advanced analytics help answer key content and engagement questions, enable quick reaction and draw meaningful and actionable insights to fuel the customer facing productivity and enhance overall performance of the platform.

Major Learning Outcomes: We are now in a constant change environment, which compels organization's to rethink their processes and strategies frequently. The success of a VOD is ascertained in large measure by the company's ability to keep pace with technological innovation and changing customer expectations. Analytics can no longer be treated as an additional function, but is rather intrinsic to business strategy.

Brief Description of working environment, expectations from the company: Viacom 18 Media Pvt. Limited founded in November 2007 is a joint venture operation in India between Viacom and TV18 based in Mumbai. Voot, launched in March 2016, forms the digital arm of Viacom 18. It is Viacom18's advertising-led video-on-demand platform that is available as an app for iOS and Android users, and a website for desktop consumption. Growth and Innovation Team, Digital Ventures. The team performs the following tasks-Heading growth initiatives and revenue enablement for all consumer facing digital businesses. Ideating business plan for new business/ product launches. Forming distribution and other international strategic partnerships. Heading end-to-end Sales strategy: improving salesforce effectiveness through planning, revenue optimisation, efficiency improvement, etc. Coordinating and executing digital ecosystem development programs with external partners. Manage strategic initiatives to enhance consumer profile and help rapidly scale app.

PS-II Station: Vymo, Bangalore

Student

Name: Debargha Sarkar (2016H1490263P)

Student Write-up

Short Summary of work done during PS-II: Work included data extraction, data cleaning, data analysis, data visualization, model building, working with big data in hdfs, analyzing effect on the productivity of the sales agents after introduction of suggestion. Analyzing agents meeting patterns there app usage pattern, suggestions feedback pattern across clients.

Tools used (Development tools - H/w, S/w): Python, PySpark, Excel

Objectives of the project: To build Suggestions service and analyze the effect on the productivity of the sales agents after introduction of Suggestions.

Major Learning Outcomes: Data Cleaning, Data Analysis, Data Visualization, Model building, Big Data Analytics, Functional programming.

Brief Description of working environment, expectations from the company: Working environment is ok, since there are always some space issues in startups. People are helpful , learning opportunities are good and work pressure is lot. So If somebody is joining this station he/she should be prepared to work till very late at nights. But he/she can learn a lot in the organization.

PS-II Station: Wealth India Financial Services Pvt. Ltd., Chennai

Student

Name: Shagun Parashar (2016H1490254P)

Student Write-up

Short Summary of work done during PS-II: Improved existing product flows. It included the following :
Conducting competitor analysis. Conducting consumer surveys. Implementing industry best practices

Tools used (Development tools - H/w, S/w): Google Analytics, JIRA, Microsoft PowerPoint, InVision

Objectives of the project: To make the product features intuitive enough for the user to use.

Major Learning Outcomes: - Always keep a tab on what other's are doing good in the same industry. Have a good grip on domain knowledge. Match pace with market trends and keep improvising accordingly.

Academic courses relevant to the project: Product and Brand Management. Marketing Research. Marketing. Corporate, Finance and Taxation (only because of the the industry domain).

Domain: Electrical Electronics

*PS-II Station: ARM Embedded Technologies Private Limited,
Bangalore*

Student

Name: Divyansh Jain (2014A3PS0212G)

Student Write-up

Short Summary of work done during PS-II: The first one and a half months were spent on training and instruction on PnR tools and methods. The company sent us to the Cadence office to participate in an official training session. I worked on Asymmetric Aging (NBTI, PBTI) and the effects of aging on the critical paths of the designs. Initial work included Spice simulations on Standard Cells, followed by path level Spice simulations. This was the analyses phase. After this, I implemented a Neural Network based solution to quickly estimate the effects of aging on delay and transition times using data generated from Spice simulations.

Tools used (Development tools - H/w, S/w): Python, Tcl, HSPICE, Cadence Tempus.

Objectives of the project: Analyses of Asymmetric Aging on critical paths.

Major Learning Outcomes: Learnt a great deal about Physical Design especially Spice and timing related issues relating to reliability design. Got a great deal of practice Scripting and training Neural Nets.

Brief Description of working environment, expectations from the company: I was assigned to the Physical Design Group's implementation team. The team mainly does Placement and Routing of ARM cores for external customers. The environment is relaxed and the focus is on delivering results. Interns are given time, and effort is put into training them. We were all given individual projects, which were more research focused, rather than customer based. Each individual is supposed to take initiative and drive their own projects, with mentors and team members available for help and guidance. You encouraged to provide out of the box solutions and collaborate across teams.

Academic courses relevant to the project: ADVD.

Name: Ashkandh Prasad (2014A3PS0313G)

Student Write-up

Short Summary of work done during PS-II: Implementation of API's and Unit Testing for Tracing Circular Buffer logs, Radio time analysis, Protocol Stack Development

Tools used (Development tools - H/w, S/w): Visual Studio 2017, PyCharm PDK, Xanthus, Git Bash.

Objectives of the project: Trace Unit Testing for Circular Buffer Logs.

Major Learning Outcomes: Communication Protocol Stack, Git-Gerrit and Jenkins, Framework Tracing.

Brief Description of working environment, expectations from the company: Great support from mentors and the whole team, Excellent working culture, regular seminar sessions.

Academic courses relevant to the project: Mobile Telecommunication and Data Networks, Embedded Systems.

Name: Ashkandh Prasad (2014A3PS0313G)

Student Write-up

Short Summary of work done during PS-II: This project deals with the physical design aspect of a big CPU or a GPU. It in short gives an exposure to all the steps undergone from the RTL code to the generation of GDSII mask for fabrication. The result expected is to design a fast and accurate way to design a higher instance CPU or GPU. The methodology applied is to follow non-conventional top-down approach and hierarchical way of implementation.

Tools used (Development tools - H/w, S/w): Cadence- innovus, genus, tempus Tcl scripting, Shell.

Objectives of the project: Creation of a scalable flow which is fast, accurate and deployable across big CPU or GPU.

Major Learning Outcomes: Using the tools and getting accustomed with industrial VLSI.

Brief Description of working environment, expectations from the company: Very helpful team with projects oriented for both learning and research exposure. The teams in short give the flavor of working in VLSI industry. The managers don't expect much but to just understand the flow and get acclimated with the tool. However finishing project would always be preferred.

Academic courses relevant to the project: Analog and Digital VLSI, Electronic Device.

PS-II Station: Cadence Design Systems India Pvt Ltd. - CAD Software, Bangalore

Student

Name: Dharmendra kumar Sharma (2016H123145P)

Student Write-up

Short Summary of work done during PS-II: I am working in analog circuit design area. I have worked in two projects here and deal with different blocks. Like one project is USB2.0 in which I worked on DETECTOR block and other one is BIST RECEIVER. For working in these block there is a need of bit communication logics so I had to study envelop detector etc .And here you will come to know how practically eye Diagram gives a view of your circuit properties.

Tools used (Development tools - H/w, S/w): Cadence virtuoso (ADEXL).

Objectives of the project: Comparison and detection of signals for a desired output .

Major Learning Outcomes: working on post layout design.

Brief Description of working environment, expectations from the company: working environment is good .My mentor is guided me well and and we can take help from others also if we struck on anything related to tool. company is expecting to finish the work with a accuracy and they give proper time for it.

Academic courses relevant to the project: Analog IC design.

PS-II Station: Cadence Design Systems India Pvt Ltd. - Processor Design, Pune

Student

Name: ANKIT SINGH (2013B2A30847G)

Student Write-up

Short Summary of work done during PS-II: Added benchmarks and power diags for power analysis of different functions (like complex fir, block real fir, block real iir etc) on different HiFi cores like HiFi 3 ,HiFi4 etc. Made API of convolution 2d used in deep speech 2 architecture of Baidu's. Also did quantization of floating data to get fixed point data so that verification can be done with output from python and C.

Tools used (Development tools - H/w, S/w): Linux environment.

Objectives of the project: To do power analysis on different hifi cores of different functions. To create API for convolution 2d being implemented.

Major Learning Outcomes: Got to know C more in depth, To do work independently without any assistance.

Brief Description of working environment, expectations from the company: Working environment is really good. People are cooperative and helpful. Just do whatever task is assigned with minimal help. And yes try to do in time bound manner.

Academic courses relevant to the project: C programming.

PS-II Station: Central Electronics Engineering Research Institute, Pilani

Student

Name: Amit Singh (2014A3PS0214P)

Student Write-up

Short Summary of work done during PS-II: The main aim of the project was to build a foundation in audio signal processing to learn different ways to produce specialized sound out of a monoaural sample sound.

Tools used (Development tools - H/w, S/w): MATLAB R2016a, online resources, research papers.

Objectives of the project: Soundscape recreation using binaural audio synthesis.

Major Learning Outcomes: In depth knowledge of signal processing, audio signal processing, specialization of sound waves, proficiency in using MATLAB.

Brief Description of working environment, expectations from the company: Workaholic work environment. Interactive mentors who know about their specialized domains, encouraging effective doubt clearings regarding the project.

Academic courses relevant to the project: signals and systems (EEE F243), digital signal processing (EEE F434)

Name: Abhinav Gupta (2014A4PS0343P)

Student Write-up

Short Summary of work done during PS-II: Designed a MEMS based torsional accelerometer serving a defined purpose with performance compliant with certain fixed parameters. A CAD model model was developed and performance was evaluated on CoventorWare tool. Analytical model corresponding to the same designed was also developed. The analytical model was written in C++ language for swift analysis of further devices to be designed on similar lines.

Tools used (Development tools - H/w, S/w): CoventorWare, Eclipse C++ IDE, MATLAB.

Objectives of the project: To design and develop an analytical model of a MEMS base torsional accelerometer.

Major Learning Outcomes: Better understanding of Micro accelerometers and physics behind their operation and working principles. Also, learnt to use industry standard software for design and analysis of MEMS devices.

Brief Description of working environment, expectations from the company: Working environment is extremely student friendly, ideal for learning new concepts. Project guide was extremely supportive in all the initiatives and encouraged to pursue the project beyond set objectives. Expect ample learning opportunities, complete support from mentor and plenty of resources to study with.

Academic courses relevant to the project: Mechanics of Solids, Advanced Mechanics of Solids, Introduction to MEMS, Fluid Mechanics, Mathematics 1, Mathematics 3, Electrical Sciences.

Name: Aseem Sindwani (2014A4PS0312P)

Student Write-up

Short Summary of work done during PS-II: Every year nearly 10% of the total food grains stored post harvesting got wasted. This is due to lack of proper maintenance, proper storage facilities, etc. which arises an urgent need of the system that will integrate all the warehouses of the organization and provide them the proper feedback about the conditions of food grains stored in the warehouse. This project deals with making of a continuous monitoring system which tell about the food grain's health real time, so that necessary actions can be taken. By the help of IoT and WSN, a hardware module has been designed to monitor the condition of the food grains. The parameter to monitor depends on the grains stored in the warehouse. The project also deals with the implementation of these devices in a warehouse for pilot testing and development of the algorithms for predictive maintenance of the food grains. Finally, the focus of the project is also to make the system economical, easy to implement in the warehouses.

Tools used (Development tools - H/w, S/w): ESP 8266, Sensors, 3D printer, Eagle CAD, Keras, Jupyter Notebook, Arduino, Backend and Frontend

Objectives of the project: Real Time Monitoring of Food Grain Warehouse using IoT and Deep Learning.

Major Learning Outcomes: 1. Implementation of IoT, 2. IoT communication and Networking protocols, 3. Circuit Designing, 4. Rapid Prototyping, 5 Deep Learning, 6. Data Science, 7. Database Management.

Details of papers/patents: 1. Patent for Implementation of Real Time Monitoring system in food Grains Warehouse, 2. Paper for predicting grains health condition based on deep Learning

Brief Description of working environment, expectations from the company: The mentors here are very supportive, based on the department. In some departments you really have freedom to do what you want. In my case the project on which I was working was selected by me and even pitched by me, so I have complete freedom regarding the tool I want to use and about timeline. Further talking about the office hours its from 9 to 6 in evening but again main what matters is the purposed timeline, so if you are able to complete the work on time, office hours doesn't matters.

PS-II Station: Cypress Semiconductor India Pvt Ltd., Bangalore

Student

Name: Shahrukh Ansari (2016H1230144P)

Student Write-up

Short Summary of work done during PS-II: Designed an architecture of eUSB (embedded usb which is a new low power replacement to USB 2.0 especially required for low power devices) repeater and implement its RTL. The function of the repeater is to convert the USB2.0 signaling into eUSB2 signaling. The repeater architecture is made as per the eUSB2 specification 1.08. (latest spec. Mar. 2018) After the architecture design, Lint check is performed using Leda, CDC(clock domain crossing) check is performed, initial check of synthesis is also performed using Genus. The implementation is done mostly in system verilog for reusability advantage and some existing ips are used which were coded in verilog. The RTL code written is synthesizable and done by considering all the practical problems that may encounter during backend flow of the IP.

Tools used (Development tools - H/w, S/w): Leda-Synopsys, 0in CDC- Mentor graphics, Genus-Cadence.

Objectives of the project: Requirement of client: to make an IP that is a low power solution to existing USB2.0. Also to get hands on experience with cypress RTL flow, system verilog and tools required to make RTL.

Major Learning Outcomes: Industrial design flow, gaining hands on experience on tools and learning system verilog as an RTL language.

Brief Description of working environment, expectations from the company: The working environment is very good, Giving us full freedom for innovation and non-bossy culture. Also, they are giving good and live projects for interns too so that they can learn most of it. Probably the best place in the market for learning as an Intern.The only not good side about this company is that they give lesser remuneration as compared to their competitors, but expecting this to improve.

Academic courses relevant to the project: VLSI Architecture, VLSI Design and Advance VLSI Architecture

Name: Lalit Murlidhar Chaudhari (2016H1400041G)

Student Write-up

Short Summary of work done during PS-II: Real value modeling for mixed signal verification - verification of hard ip with analog solver(SPICE-simulation using SPECTRE) needs considerable time. In complex design replacing these pre-verified hard ip blocks with subsequent real value blocks coded with help of Verilog-AMS would save considerable time and license cost. These real value models require digital solver and take considerably less time. In complex design, blocks which are not under consideration are replaced with the behavioral Verilog-AMS blocks and only block under consideration is solved using SPICE netlist. This behavioral modeling was done using wreal modeling. Purely digital models can't capture the behavior of analog blocks thus new kind of modeling needed which gives required accuracy with fast simulation capabilities. S40EPLSYS hard ip block was modelled in Verilog-AMS using wreal modeling. Model vs schematic verification was done to verify if the model and given schematic is as per the given specifications.

Tools used (Development tools - H/w, S/w): Questasim, SPECTRE.

Objectives of the project: Functional Verification of Hard ip blocks using Real value modeling.

Major Learning Outcomes: Learnt about verification environment for mixed signal verification. Learnt Verilog-AMS basics required for capturing functionality of analog blocks. Learnt Model Vs Schematic methodology for functional verification of hard ip.

Brief Description of working environment, expectations from the company: Very supportive environment with goal oriented culture. We were given problem based tasks which involved new learning and application. Team work as well as individual effort was given importance. Company expected us to learn and come up with solutions to given problem. Problem solving skill was appreciated. Company expected us to take responsibility.

Academic courses relevant to the project: VLSI Desing, VLSI Architecture, Test and test-ability.

Name: Viral brahmbhatt (2016H1230141P)

Student Write-up

Short Summary of work done during PS-II: Profile: Analog circuit design

Project 1 : Design of high speed voltage mode transmitter.

The objective of this project was to provide an alternative driver architecture to the existing current mode driver. It required the design of a voltage mode low swing drive for Mhz frequency range. As a whole, the task included design of driver, Op-amp, LDO, BGR. Project 2 : Feasibility analysis of Ghz range driver and receiver in 130nm. The objective of this design was to study if it is feasible to realize a Ghz speed driver and receiver in 130nm tech. Here, the task included design of low swing driver/receiver

with some advanced techniques to operate at Ghz frequency. Overall, this work allowed me to apply and sharpen the core analog design skills. it required a good working knowledge of RC circuits, VLSI design, analog circuits, signal processing etc.

Tools used (Development tools - H/w, S/w): cadence Virtuoso, eldo asim, ez waves

Objectives of the project: Design of High speed transmitter/Receiver

Major Learning Outcomes: Analog circuit design, high speed limitations of VLSI design, remedy, transmission system.

Brief Description of working environment, expectations from the company: Cypress has really a cool working environment. Assigned work load is reasonable and deadlines are practical. Managers are mostly co-operative and allows an employee to work in his/her space. Most teams encourage learning for new joinees. Senior teammates are approachable and friendly. Hence, a curious and proactive student would have a lot of learning from teammates' knowledge and experience.

Academic courses relevant to the project: Analog IC design, VLSI design, Advc VLSI design, Netwrok analysis (B.tech)

PS-II Station: Infinera, Bangalore

Student

Name: Sreejith R (2014A8PS0524G)

Student Write-up

Short Summary of work done during PS-II: The work mainly focused on ASIC prototyping on FPGAs. Since large ASIC designs require lengthy simulation times for verification, the simulation cannot be done for the system as a whole. To accelerate the process, the designs can be put together on one or more FPGAs and integrated for functional verification. Hence the work involved synthesis of the various modules in the ASIC and programming the FPGA for functional verification.

Tools used (Development tools - H/w, S/w): Synopsys Design Compiler, Xilinx Vivado, Xilinx FPGA eval boards

Objectives of the project: ASIC prototyping and verification.

Major Learning Outcomes: Learned the design flow in a VLSI industry. Worked on the latest tools and FPGA technologies provided by Xilinx.

Brief Description of working environment, expectations from the company: Working environment at Infinera is friendly, and at the same time comes with all the professionalism expected of a large scale VLSI company. The people at Infinera are all highly experienced in their respective fields. The employees are also always willing to spare time to answer your doubts and teach the tech (as long as it doesn't interfere with work). The company expects you to be earnest and sincere at your job and only gives you work that they believe you can handle.

Academic courses relevant to the project: Digital Design, Signals and Systems, Communication Systems, Analog and Digital VLSI Design.

Name: Sai Pranav (2013B3A30566H)

Student Write-up

Short Summary of work done during PS-II: Tuned SerDes data path of the product for various protocols/interfaces used in the product.

Tools used (Development tools - H/w, S/w): Python, High speed oscilloscopes, Diagnostics SW.

Objectives of the project: To validate the HW design and improve the performance of the SerDes Data path

Major Learning Outcomes: Channel characterization of a high speed link and tuning it using various equalization techniques.

Brief Description of working environment, expectations from the company: Friendly environment. Recognition for hard work. Should be good at fundamentals and automation.

Academic courses relevant to the project: Digital Communication, Communication Systems, DSP

PS-II Station: Intel - Computer and VLSI Architecture, Bangalore

Student

Name: Shubham Gupta (2013B4A80666G)

Student Write-up

Short Summary of work done during PS-II: The team I was allotted to works on automation of server perform testing. The day-to-day work involves using a testing architecture comprising Raspberry Pi to write test cases using Python.

Tools used (Development tools - H/w, S/w): Python, Raspberry Pi

Objectives of the project: ASIC prototyping and verification.

Major Learning Outcomes: Introduction to Python, server platform architecture, computer networking principles, industrial-level automation.

Brief Description of working environment, expectations from the company: The working environment is very flexible and comfortable, Intel being a very reputed and old company. Interns are treated at the same level as permanent employees, and are provided the same work and facilities as them.

Academic courses relevant to the project: Computer programming, computer architecture.

PS-II Station: Intel - Embedded Software, Bangalore

Student

Name: Ankit (2014A3PS0287G)

Student Write-up

Short Summary of work done during PS-II: Testing and Verification of code by writing Test Cases.

Tools used (Development tools - H/w, S/w): Company's Proprietary Software

Objectives of the project: Testing and Verification.

Major Learning Outcomes: Embedded C.

Brief Description of working environment, expectations from the company: Working Environment is really good. Team is very helpful.

Academic courses relevant to the project: Embedded C, Digital Communication network

Name: Hitesh kumar (2014A8PS0781G)

Student Write-up

Short Summary of work done during PS-II: My project was to design hardware to implement Haptics feedback for VR Gaming compatible laptops

Tools used (Development tools - H/w, S/w): Allegro Design Entry CIS, Allegro PCB Editor, Visual Studio 2015.

Objectives of the project: Hardware Design to implement Haptics feedback for VR based Gaming Laptops.

Major Learning Outcomes: Hardware Design, Boards Testing & debugging.

Brief Description of working environment, expectations from the company: During my Internship I worked in a Lab. I was assigned a mentor & I worked with 2 other Design engineers. They were Supportive. Working on Hardware design from Deciding Hardware Architecture to Debugging and Testing designed boards was an amazing experience.

Academic courses relevant to the project: Analog Electronics, Power Electronics, Embedded System Design, Digital Signal Processing.

Name: Anjana Asok (2013A3A70244P)

Student Write-up

Short Summary of work done during PS-II: Developed a model for voice command recognition as well as made a seamless access to FPGA from firmware running on PC.

Tools used (Development tools - H/w, S/w): Quartus Prime Complete Development Suite, Verilog, C, Python, Tensorflow.

Objectives of the project: To develop seamless FPGA access and make a machine learning model for command recognition.

Major Learning Outcomes: Exploring deep learning and FPGA Design Flow, Corporate.

Brief Description of working environment, expectations from the company: Courteous staff. Strict hierarchy in my team. To propagate your ideas to higher authorities needs a lot of levels of scrutiny and hence is slow. Not very inclusive.

Academic courses relevant to the project: Microprocessors and Interfacing, Computer Architecture, Machine Learning.

Name: Srimanta Barua (2014A7PS0152H)

Student Write-up

Short Summary of work done during PS-II: Studied power measurement, implemented dynamic rack-level dynamic power capping. Studied hardware configuration options, set up workloads/benchmarks and measured performance results after modifying said configuration options, to arrive at optimal configuration for each workload.

Tools used (Development tools - H/w, S/w): PuTTY, tmux, vim, Qemu, git, gcc, turbostat etc.

Objectives of the project: Optimize power consumption and performance for given workload patterns on a specific hardware platform.

Major Learning Outcomes: Details of Intel platform features and configuring them (turbo boost, hyperthreading, C-states, P-states, RAPL, MSRs); Linux networking (routing, firewalls); writing Linux kernel modules; virtualization with Qemu/KVM

Brief Description of working environment, expectations from the company: Manager was very helpful; general work atmosphere is very relaxed; a lot of bureaucracy (difficult to coordinate between different teams / HR)

Academic courses relevant to the project: Computer networks, operating systems, computer architecture.

PS-II Station: Intel - Testing & Verification, Bangalore

Student

Name: Harjap Singh Saini (2016H1230137P)

Student Write-up

Short Summary of work done during PS-II: I have done internship in SDG SoC Clock team in BGA Campus, Bangalore. I joined the team when the project was in implementation phase. I implemented 14 different clock partitions having different voltage domains as well as speed. I have learnt how to balance the stages so as to have minimum possible skew, I have got hands-on experience on how to perform Formal Equivalence Verification for clock partitions. Also, I have learnt the Synopsys Tool " IC Compiler II, Conformal Smart Logic Equivalence Checker (LEC), Visio Professional, some Intel specific tools and Perl scripting language so as to parse the log files for our reference.

Tools used (Development tools - H/w, S/w): IC Compiler II, Conformal Smart Logic Equivalence Checker (LEC), Visio Professional, some Intel specific tools.

Objectives of the project: In large system-on-chip (SoC) designs, there are multiple clock domains running on the same die. By having multiple clocks in a single domain running at different speeds, not all logic has to run at maximum performance and expend a lot of power. Clocks in a single domain have to be balanced and synchronized with respect to each other. This complicates the task of clock design. Taking into account all these aspects, modeling of the clock network in the design, synthesis and physical stages of the design is done.

Major Learning Outcomes: Design, Planning and Implementation of Clock in SoC.

Brief Description of working environment, expectations from the company: The company environment is very good, be it flexible working hours, support from the team-mates and manager, team-outings and many other things. Interns are treated equivalent to employees and are given due respect in the team. Every day brings a new learning day at Intel. In a nutshell, only one thing can be said - As Intel says, "Amazing Works Here!".

Academic courses relevant to the project: Advanced VLSI Design, CAD for IC Design

Name: Aryan Singh (2013B4A30581G)

Student Write-up

Short Summary of work done during PS-II: Software development

Tools used (Development tools - H/w, S/w): Java

Objectives of the project: Software testing and development

Major Learning Outcomes: Java.

Brief Description of working environment, expectations from the company: Chilled environment , not much challenging work.

Academic courses relevant to the project: C programming

Name: Vaibhavdeep Singh (2013B4A30663G)

Student Write-up

Short Summary of work done during PS-II: Developing optimized test cases to test and verify the correct working of the physical layer of the 3G Firmware. This firmware is part of the Baseband Modem (SoC) which will be used in cell phones.

Tools used (Development tools - H/w, S/w): GDB,MDB,debugging tools, GIT

Objectives of the project: Verify the correct working of the physical layer of the 3G Firmware.

Major Learning Outcomes: Learned about different scenarios in 3G and features.

Brief Description of working environment, expectations from the company: It is a great learning opportunity for undergrads to work in a renowned company such as Intel.

Academic courses relevant to the project: Communication systems, Mobile telecommunication networks, DSP

Name: Neel Choksi (2013B4A80738P)

Student Write-up

Short Summary of work done during PS-II: I worked on resampling of 3D point cloud data obtained from an obstacle using a Microsoft Kinect. These resampling methods involved Voxel grid based segmentation and DNN based segmentation. This could be used in robotic applications where object detection is required.

Tools used (Development tools - H/w, S/w): C++, Microsoft Kinect, Cilantro library, DLib library, Libfreenect library

Objectives of the project: Resampling of 3D point cloud data using various segmentation methods

Major Learning Outcomes: Voxelization process, DNN segmentation process, KD-tree algorithm

Brief Description of working environment, expectations from the company: Work environment is free enough to explore things one likes. But even though it was a research division, people didn't seem to be enthusiastic about their work. The place was not motivating at all.

Academic courses relevant to the project: Linear algebra, C programming

PS-II Station: MediaTek Bangalore Pvt. Ltd., Bangalore

Student

Name: Sanchit Agrawal (2016H1400106P)

Student Write-up

Short Summary of work done during PS-II: The entire Physical design process is concentrated in a flow which is further divided in several steps which include, floor planning, placement and optimization of cells and other memory units if any, clock tree synthesis and routing. These four steps are divided in a Bflow which is a Mediatek specific physical design flow. For now I am running with place-opt stage of the flow. For this project I am using ICC2 compiler (Synopsys) and Innovus (Cadence) tools for performing PD process and many other tools such as starRC, Caliber will be used for internal design check and violations.

Tools used (Development tools - H/w, S/w): Synopsys IC compiler (ICC2)

Objectives of the project: Objective of the project includes physical design implementation of chip or various blocks which together constitutes a chip. Scope is chip design, as physical design in other terms can be said as chip design.

Major Learning Outcomes: Learnt about chip design process, practical meaning and behavior of clock and data path inside a VLSI circuit. Learnt scripting languages such tcl perl and also linux.

Brief Description of working environment, expectations from the company: Working environment is quite good, there is a lot of space for a fresher to learn as they get to do everything from scratch. Also people are very supportive in every regard whether it may be in terms of knowledge or cooperate experience.

Academic courses relevant to the project: CAD for IC Design

Name: Meghana Ganji (2016H1240029H)

Student Write-up

Short Summary of work done during PS-II: I Learnt the architecture and build of smartphone modems. Learned the automation tool and its implementation. Another pre-processing tool was also required for the study.

Tools used (Development tools - H/w, S/w): Proprietary tool

Objectives of the project: To implement and automate higher layer issues using Proprietary tool.

Major Learning Outcomes: Architectural details of smartphone modems. Protocol stack diversification.

Brief Description of working environment, expectations from the company: The work environment is very encouraging and people are very supportive.

Academic courses relevant to the project: Wireless and Mobile Communications

Name: Anirudh m v (2016h1230029G)

Student Write-up

Short Summary of work done during PS-II: During PS 2 we were treated as original employees and were required to learn Physical Design (PD) as soon as possible and contribute to the team as soon as possible. After one month of training we were given previously taped out chips for practice. We did floor planning, placement, clock tree synthesis, and routing on the chips or blocks assigned to us. After 4 months of training on old projects we were given opportunity to support live projects.

Tools used (Development tools - H/w, S/w): Hardware tools- Icc2, primetime, caliber.

Objectives of the project: To do complete physical design of a block.

Major Learning Outcomes: Deep understanding on underlying concepts and hands on experience on physical design

Brief Description of working environment, expectations from the company: Friendly and helpful colleagues. Nice spacious cubicles and refreshment facilities.

The company expect you to learn quickly all the concepts and contribute to the team earliest.

Academic courses relevant to the project: Cad for ic design. VLSI design ,digital electronics.

Name: Nandan B R (2016H1400108P)

Student Write-up

Short Summary of work done during PS-II: Started with the basics of DFT, then started learning mediatek flow for DFT.

The ATPG flow and algorithm involved in the pattern generation. By understanding the 'SDC', the interpretation of the same by tool. This interpretation helps to reduce the test application time on ATE very significantly.

Tools used (Development tools - H/w, S/w): Design compiler, cadence conformal, TetraMax.

Objectives of the project: To reduce the test application time in serial scan.

Major Learning Outcomes: SDC interpretation by TetraMax, transition delay modelling, simulation of patterns.

Brief Description of working environment, expectations from the company: Working environment is too good here, because the colleagues are motivating us to do the work, every persons are helped me. It is really a good experience here. This organization expects work and life balance. So that we can do our work on time.

Academic courses relevant to the project: VLSI TEST AND TESTABILITY

Name: Ankit Pareek (2016H1230136P)

Student Write-up

Short Summary of work done during PS-II: During the initial days, I learned about the tools used for Place & Route. I started with library preparation for IC Compiler tool from Synopsys which is seen as the inputs to the tool. The inputs which the front end team provides (gate level netlist & some constraint files) also come up with certain Tcl scripts for each stage of PnR which is mentioned in the project report. I started going through these scripts to analyse what are the different commands used at each stage. At every stage, I analysed different reports are generated (such as timing, area & power). After Place & Route, I started with Physical verification, to clean all the Design Rule violations, shorts & opens in the design. After Physical verification RC extraction is done by using StarRC tool. By using the parasitic (RC) information from StarRC , exact timing analysis is done using Prime Time tool from Synopsys. In this analysis, I cleared all the timing paths which were violating the constraints.

Tools used (Development tools - H/w, S/w): IC Compiler2, Prime Time & StarRC

Objectives of the project: need to be converted to inputs specific to a particular Automatic Place & Route tool. This process is known as Library Generation. P & R is divided in different stages and for implementing each stage the given scripts have to be updated. At each stage certain reports are generated to analyse the timing, area & power. The reports are analyzed to see if they are closer to the desired results.

Major Learning Outcomes: The learning outcome of this project is that I now thoroughly understand Linux, PnR tool, Tcl scripting & timing analysis that is STA

Brief Description of working environment, expectations from the company: provided by the company and there is a mentor which will provided by the manager to guide you in every aspect. The manager sets some goals and you need to complete them in the given time.

Academic courses relevant to the project: CAD for IC Design

Name: Aditya Anand (2016H1230028G)

Student Write-up

Short Summary of work done during PS-II: The work is related to Synthesis, Timing Analysis and various checks like Power, Area and Timing. Along with this Perl scripting.

Tools used (Development tools - H/w, S/w): PrimeTime, Design Compiler.

Objectives of the project: The project aimed at learning how after RTL the Physical Design integration work is done.

Major Learning Outcomes: Static Timing Analysis, Power and Area optimization techniques, Clock Tree Synthesis.

Brief Description of working environment, expectations from the company: Discussion of any concept is always welcomed. The management is also supportive in providing all the required facilities and amenities to us.

Academic courses relevant to the project: VLSI Design, Advanced VLSI Design,CAD for IC design

PS-II Station: Mentor Graphics, Noida

Student

Name: Agrim Agarwal (2013B2A80799G)

Student Write-up

Short Summary of work done during PS-II: I worked in the VTLQA team. Our work was mostly regarding the verification of the mentor product.

Tools used (Development tools - H/w, S/w): UVM, System verilog, Questa sim

Objectives of the project: to verify the mentor product VTL

Major Learning Outcomes: System verilog, UVM, eDP protocol, I2C protocol.

Brief Description of working environment, expectations from the company: Working environment is good. They give us space to learn and the project that I got was also very helpful in learning various things about this industry.

Academic courses relevant to the project: DD, DCN

Name: Anshul Gandhi (2013B3A30633G)

Student Write-up

Short Summary of work done during PS-II: I Worked on the integration of the QVIP (Questa Verification IP) and VTL (Emulation IP) for the communication protocol, CAN. Implemented the emulation APIs inside the QVIP (simulation environment) so as to run tests developed for the simulation environment. Added certain additional features and fixed few bugs within the Emulation verification IP.

Tools used (Development tools - H/w, S/w): C++, SystemVerilog, Linux

Objectives of the project: Integration of test environment for Verification IPs of the simulation tool and Emulation for CAN.

Major Learning Outcomes: SystemVerilog and automotive communication protocols.

Brief Description of working environment, expectations from the company: Mentor Graphics provides an excellent environment for learning and bridging the gap between an academic and corporate world. The company provides benefits such as subsidized meals and transportation to its interns. Interns are expected to carry out any task assigned to them with utmost sincerity.

Academic courses relevant to the project: Digital Design, Object Oriented Programming.

Name: Shashank Shekhar (2014A3PS0196P)

Student Write-up

Short Summary of work done during PS-II: The existing and latest released VHDL packages were analyzed and the missing, extended and modified functionality were identified. Then it was checked if the existing code is compatible with the 2008 packages and accordingly a part of the code was modified. Test cases were written for most of the new features in VHDL 2008 and checked if the tool supports them.

Tools used (Development tools - H/w, S/w): VHDL, C++, Powerpro.

Objectives of the project: To develop support for VHDL 2008 in Powerpro.

Major Learning Outcomes: Front end processing of a VHDL RTL, Latest developments in VHDL.

Brief Description of working environment, expectations from the company: The company really has a mentoring culture. The team is very supportive and non intrusive. A great opportunity to work with some highly motivated people.

Academic courses relevant to the project: Computer Programming, Computer Architecture

PS-II Station: Nvidia Graphics - Hardware, Bangalore

Student

Name: Raunaq NandyMajumdar (2014A8PS0396P)

Student Write-up

Short Summary of work done during PS-II: First I had to design an PCIe end-point module to be incorporated with Synopsys PCIe root complex and DGPU so that when all these implementations are done in VDK the software should identify the connected device as an DGPU. The project required me to have a thorough understanding of the System-C and OOP concepts which I acquired with the help of the initial training that was provided to me by my mentor. It also required some basic understanding of the TLM protocol, its utilities for our project. I designed the end-point model based on the skeleton structure provided by Synopsys. The end-point model has an TLM initiator socket, an TLM target socket, an export channel which implements the configuration functions. The end-point functions in two modes: stand alone and pass-through mode. When acting as a standalone mode whenever it receives the configuration read/write request it processes the address location accordingly and returns appropriate result back to the requester which in this case is the root-complex. Whenever the end-point works as a pass-through mode it will pack the information sent by the root-complex into a transaction layer packet of specified format through the module packetizer and sends it to the DGPU interface. The DGPU then sends back the data or return header when necessary again in a specified packet format and the endpoint parses out the important information and sends it back to the requester, in this case it is the root-complex. The entire design was written in System-C with the basic TLM protocol especially the blocking transport (b_transport) method

Tools used (Development tools - H/w, S/w): Synopsys Virtualizer Vdk, Linux.

Objectives of the project: Synopsys-VDK-DGPU integration, Synopsys-SCSIM-DGPU.

Major Learning Outcomes: SystemC, PCIExpress, VDK integration, Virtualizer.

Brief Description of working environment, expectations from the company: great working environment. approachable managers and mentors. Flexible working hours. main focus is to getting the work done whether you complete it in working hours or complete it later by logging into at night from home. One can work across multiple teams and thus learn a lot.

Academic courses relevant to the project: 1. Computer architecture, 2. C, C++, SystemC, 3. Verilog , 4.

Digital Design

Name: ASHUTOSH KUMAR SINGH (2016H1230140P)

Student Write-up

Short Summary of work done during PS-II: I understood the Low power Methodologies (Power/Clock gating, MSCG) used in Nvidia along with their Design considerations and constraints involved in implementation. Perform VCLP run for Project (Ampere-GA100) on frequent basis, analyzing the runtime errors and violations reported, after developing a good knowledge base for UPF and VCLP through Testcases analysis. Implemented VCLP Results post processing script and Feature verification triage result post processing script to display critical parameters like Violation count(VCLP), Pass/Fail test status, H/W S/W CL (Triage), along with Tree build status and resource (Runtime , Memory) stats in HTML Dashboard , simultaneously maintaining a Excel Database having Past days stats used in analyzing trend using Trend charts. Implemented PST and Policy check script to report Missing and Redundant policies as Errors/Warnings in output log file. Overall , with these automation , I am responsible for reducing time ,efforts required to analyze huge output log files. Future Plans include working on UPF verification, understanding PSI flow along with Features (GC6,RTD3) understanding.

Tools used (Development tools - H/w, S/w): VCLP , PERFORCE.

Objectives of the project: The main objective of this project is to ensure that the design must conform to the power constraints , consume lowest possible power to reduce battery size and cooling setup requirements but the functionality and the performance should remain intact even with Low power methodologies in place. Acquire thorough understanding of Low power techniques , power intent (UPF format) and VCLP static check tool.

Major Learning Outcomes: Low power design techniques-DVFS, power& clock gating ,Design and working of Isolation cell, level shifters ,Clamps etc. learnt about UPF structure and Script writing : Perl & HTML.

Brief Description of working environment, expectations from the company: Very Good Environment , Great Team , Feeling Of Employee From 1st Month

Academic courses relevant to the project: Mel G641 Cad For Ic Design, Mel G626 Vlsi Test & Testability, Mel G642 Vlsi Architecture, Mel G624 Advanced Vlsi Architecture

Name: Ajay Surya Kanchiraju (2014AAPS0257H)

Student Write-up

Short Summary of work done during PS-II: As part of the SoC Design Team, the maintenance of software architecture of the development of Retime RTL for Inter IP or IP to I/O Datapaths and the Padding has been undertaken.

Tools used (Development tools - H/w, S/w): Internal Tools.

Objectives of the project: Maintenance of Software Architecture of Retiming and Pading RTL.

Major Learning Outcomes: In the duration of the five months, the major learning outcomes are as follows:

â— Conceptual Understanding of Retiming, Pipelining, SoC Design and Pading

â— Understanding Nvidia Workflow and Software Architecture for design and implementation of Retiming for Nvidia Tegra SoC

â— Tools used by Nvidia for implementing Retime

â— Understanding Nvidia Workflow and Software Architecture for design and implementation of Pading for Nvidia Tegra SoC

â— A holistic view of two distinct subsystems as well their interactions with the various teams and an understanding of the design consequences involved in each of these subsystems has been achieved

â— Concepts and Practices that are unique to VLSI Industry and Nvidia have added insights into past learnings and experiences.

Brief Description of working environment, expectations from the company: Working Environment is conducive for learning industry related technologies which compliments the classroom learning.

Academic courses relevant to the project: Analog Digital VLSI Design, Computer Architecture, Operating Systems, General Programming

Name: Naman Gupta (2014A8PS0522P)

Student Write-up

Short Summary of work done during PS-II: The project involves modelling of a switch (2D-arbiter) in PERL programming language. The idea is to create a generic and fully parameterized PERL script for an arbiter such that by passing the appropriate parameter values from input files we can create the various configurations of switch inside GPU, essentially in the HSHUB part of the GPU. The RTL designs for switches and arbiters are already present but to test new functionalities and perform experimental analysis on them will take a lot of time, the PERL model offers a fast and efficient solution for the same. The work in this project can be broadly divided into two parts viz. firstly, create a model which is as close

as to the existing design in terms of logic implementation and performance. Secondly, to use the model for experimental analysis and testing new features and algorithms of arbitration. The project gave me an opportunity to understand the architecture of arbiters and switches inside the HSHUB and learn PERL programming language.

Tools used (Development tools - H/w, S/w): Verdi - waveform viewer.

Objectives of the project: PERL model of existing switch design in RTL.

Major Learning Outcomes: Micro architecture of HUB part of GPU, PERL programming language

Brief Description of working environment, expectations from the company: Very friendly working environment.

Academic courses relevant to the project: C programming, Digital Design and Computer Architecture

Name: Aditya Ukarande (2014A8PS0441P)

Student Write-up

Short Summary of work done during PS-II: This project aims at the study of the entire Graphics Pipeline, GPU Memory Hierarchy and Working of the DRAM (Dynamic Random-Access Memory). As memory latency has a major contribution towards the inefficiency of the Graphics Processing Unit (GPU), the project also presents some fundamental techniques being implemented to mitigate this issue. Finally, results were obtained after implementation of these techniques.

Tools used (Development tools - H/w, S/w): Visual Studio.

Objectives of the project: Reduce Memory latency for Games.

Major Learning Outcomes: Graphics Pipeline, Life of a triangle, GPU architecture.

Brief Description of working environment, expectations from the company: Healthy working environment with really frank mentors and managers. Everybody is willing to help.

Academic courses relevant to the project: Computer Architecture, Microprocessors, C Programming, Python

Name: Suryakiran Sreepada (2014AAPS0127H)

Student Write-up

Short Summary of work done during PS-II: NVIDIA has its own model of a hub arbiter that routes data from various sources to multiple destinations. This arbiter has a priority logic that helps route the data appropriately. To test its performance, the module was implemented in the software domain. The project's main objective was to verify the functional and performance accuracy of the model. It was required that the model was sanitized for future performance studies and be made scale-able so that adding new features in the long run would be easy.

Tools used (Development tools - H/w, S/w): C++, Perl.

Objectives of the project: To sanitize and verify a cycle accurate model for a high speed hub.

Major Learning Outcomes: Scripting to automate tasks and test generation; modelling hardware units in C++.

Brief Description of working environment, expectations from the company: The work environment over here has been amazing. Company was flexible with working style, people were very friendly and interactive. There was no discrimination between interns and employees. Mentors and managers were always approachable and would clear all doubts without any objection.

Academic courses relevant to the project: Computer Architecture, Digital Design

Name: Vema Teja Krishna (2014A3PS0166P)

Student Write-up

Short Summary of work done during PS-II: Worked on the optimization of simulation run time of clocks verification components, the present codes being used for testing the functionality of the components being used by clocks team was taking a lot of time and since clocks components are used by almost each subsystem in a chip, optimizing this will have a significant impact in the verification time.

Tools used (Development tools - H/w, S/w): Python, CPP, Perl.

Objectives of the project: Optimizing the run time of the verification of clocks components.

Major Learning Outcomes: Basic overview of verification flow.

Brief Description of working environment, expectations from the company: Idea about verification flow in present industry, different standards used. Don't expect to get proper design work in Cadence or Verilog from the starting itself, it depends on a lot of factors which work you get when.

Academic courses relevant to the project: OOP

Name: Dewanshu Sewake (2013B1A30848P)

Student Write-up

Short Summary of work done during PS-II: Design verification of the PCIe bus transactions. The tasks included writing testbenches and writing coverage to track the progress of the verification. The second half the internship includes the work done to build a tool which can replace all the incorrectly named PCIe spec registers. Finally, formality tool was used to see whether the tool alter the design.

Tools used (Development tools - H/w, S/w): System Verilog, Python, Formality tools.

Objectives of the project: To improve the PCIe verification by adding coverage.

Major Learning Outcomes: Learnt the hierarchy of the test bench design, learnt scripting.

Brief Description of working environment, expectations from the company: I was always allotted the challenging tasks which helped me to learn faster. Mentor and manager were always ready to help. In short the working culture of NVIDIA is good.

Academic courses relevant to the project: Computer Architecture, Object Oriented Programming, Computer Programming, Digital Design

Name: Amal Vighnesh I. (2013B5A30432G)

Student Write-up

Short Summary of work done during PS-II: Complicated hardware designs are prone to errors and it is very important to detect them at an early stage to prevent huge losses. To do this, hardware is simulated using a Hardware Description Language and give it different kinds of stimuli to debug the issues. This process is known as verification.

In this Project some parts of the verification strategy adopted for PCIe, which is a serial, high speed computer expansion bus standard is being discussed. For this, the basics of PCIe, its capabilities and then discuss the Universal Verification Methodology and then the work done in improving the verification in the specific project are briefly explained.

Tools used (Development tools - H/w, S/w): System Verilog, Perl.

Objectives of the project: Improve PCIe testbench.

Major Learning Outcomes: Verification, API.

Brief Description of working environment, expectations from the company: The work environment is pretty good. You are treated as an employee rather than an intern.

Academic courses relevant to the project: OOP, DD,CP

Name: Arnav Vijayakarl (2014A3PS0046G)

Student Write-up

Short Summary of work done during PS-II: Updated Lint tool flow. Added extra functionality to perl scripts.

Tools used (Development tools - H/w, S/w): Perl, Linux, Makefiles.

Objectives of the project: Lint checks on RTL design.

Major Learning Outcomes: Lint flow, Perl scripting.

Brief Description of working environment, expectations from the company: Lots to learn from team members

Name: GRANDHI SAI ANIRUDH (2014AAPS0232H)

Student Write-up

Short Summary of work done during PS-II: Nvidia is entering into the autonomus Car Industry. For this the CPU code base has to satisfy certain standards. Work involved Making the codes safety compliant and at the same time compatible with present and future versions of CPU's. Also involved in developing a nvidia specific tool, these things are confidential, cannot be discussed.

Tools used (Development tools - H/w, S/w): Coverity and one Nvidia specific tool.

Objectives of the project: Generate Tests and clean DCO code base.

Major Learning Outcomes: ARM Assembly, C programming, Perforce.

Brief Description of working environment, expectations from the company: Very good Work Environment. Everyone in our team is approachable. They dont care much about your timings and all, the only thing they expect is to complete the given work.

Academic courses relevant to the project: Compuer Architecture, Digital Design

Name: Kasturi Roopa Akhila (2014AAPS0250H)

Student Write-up

Short Summary of work done during PS-II: I was required to develop a GUI for SoC design creation, visualization and manipulation. I was also required to develop the pre and post GUI scripts for YAML <->JSON conversion of the design files.

Tools used (Development tools - H/w, S/w): Perl, HTML, CSS and Javascript

Objectives of the project: Designing a complete GUI for the SoC design creation, visualization and manipulation

Major Learning Outcomes: I have learnt Javascript and Perl in a great detail. I have also understood how to analyze the requirements of each feature of the GUI and develop its functionality accordingly.

Brief Description of working environment, expectations from the company: The work environment is great. I didn't have many hard deadlines except for the last three weeks. My manager and mentor were very friendly and they let me do the work at my own pace. They helped me in all stages of the project and clarified all my doubts. The company majorly concentrates on your approach to work rather than the amount of work done.

Academic courses relevant to the project: Communication Networks, Computer Architecture.

Name: Dusi Aditya (2014AAPS0598H)

Student Write-up

Short Summary of work done during PS-II: I was a part of the CPU team of Nvidia. My team was tasked with safety and verification work of Nvidia's dynamic code optimization software for Xavier, the chip for autonomous vehicles.

Safety pertains to functional safety, not structural. Work involved going through the code base and making fixes, following MISRA-C 2012 guidelines, to make the code compliant with ISO 26262 standard, titled "Road vehicles â€ Functional safety".

This was following by verification of the DCO software, using directed and randomized tests to find/fix bugs and generate coverage report. This involved working with processor simulators and finding bugs in them as well.

Tools used (Development tools - H/w, S/w): 1. Qemu based simulator for simulating an ARM processor. 2 Native Instruction Simulator 3. Coverity by Synopsys 4. Many other proprietary tools

Objectives of the project: Making the DCO software compliant with ISO 26262 and it's verification

Major Learning Outcomes: Firm grasp over ARM architecture, the rationale behind the DCO software and insight into the architecture of CPU sitting in the Xavier SoC.

Brief Description of working environment, expectations from the company: All employees are extremely friendly and very approachable. Each intern is given a cube and ample space. No discrimination between intern and employee. Ergonomic chairs and tables. Good pantry with coffee machine and tea supply. Lunch is provided free of cost to all.

Managers also hold regular lecture sessions which were very informative.

They don't expect hard work, but smart work. Don't slog all day, just get the job done before the deadline. Many people work few hours at office and spend a good chunk of their time at home working. It is in the companies DNA to overload the employees but after sometime, you get used to it and you manage to get involved in a plethora of tasks. Work is never monotonous and I found it interesting.

Academic courses relevant to the project: Computer Architecture, Emebedded Systems Design, C Programming

Name: DEBADITYA BASU (2014A8PS0507G)

Student Write-up

Short Summary of work done during PS-II The project was mainly in the field of verification. The tasks involved verifying different power and performance metrics of GPUs using python scripts. Further tasks involved carrying out analysis to decide on architecture changes for future GPUs. The project can be summed up as understanding various power and performance estimation methodologies used by the internal power estimator tool of Nvidia and verifying that the outputs are correct and follow the expectations of the features.

Tools used (Development tools - H/w, S/w): Microsoft Excel, Python

Objectives of the project: Power Estimation of GPU

Major Learning Outcomes: Verification through Scripting Importance of Power Estimation in chip life cycle Importance of Analysis of Power and Performance metrics to decide on Architecture of Chips

Brief Description of working environment, expectations from the company: The work environment of company is excellent. Mentors and Managers are extremely helpful. Interns are treated as regular employees . The teammates are always ready to help and share the workload. Adequate time is given for ramp up before the allotment of work.

Academic courses relevant to the project: Analog and Digital VLSI Design, Computer Programming

Name: N Chetana Reddy (2014AAPS0506H)

Student Write-up

Short Summary of work done during PS-II My work was related to the performance verification of an arbiter used in the GPU. Performance of an arbiter consists of several aspects such as fairness, latency, streaming and there are tests for each of these. A test consists of three major steps - providing stimulus, running the test and doing a post-test analysis on the results. I had the chance to work in almost all of the above mentioned areas. While some of the work was related to making changes to existing tests to make them work for a new chip or to improve the efficacy of the test itself, others required me to design entirely new tests.

Tools used (Development tools - H/w, S/w): Verdi waveform viewer, Perl, UNIX, CPP

Objectives of the project: Performance verification of arbiter in GPU

Major Learning Outcomes: I learnt a new programming language - Perl. Prior to this internship, I had very limited knowledge of working with UNIX. Now, I am fairly proficient in working with it. In addition, I gained knowledge of GPU architecture and performance verification.

Brief Description of working environment, expectations from the company: Nvidia has a very healthy working environment. Mentors and managers are also very approachable.

Academic courses relevant to the project: C programming, Digital Design

Name: Nishant Khosla (2014A8PS0356P)

Student Write-up

Short Summary of work done during PS-II As a member of GPU fullchip verification team I learned about verification flow and Basic GPU architecture. I gained some debugging experience and got familiarized with the basic workflow at fullchip. I was responsible for Xprop and Gate Level Simulations. I

learned about why Xprop and GLS are used, why RTL simulations are not sufficient for signoff, how they differ from each other and how to debug failures in each.

Tools used (Development tools - H/w, S/w): Linux, Verilog, C++, Perforce, Verdi

Objectives of the project: Full chip Verification

Major Learning Outcomes: Debugging experience

Brief Description of working environment, expectations from the company: Good working environment. Helpful Co-workers. Average Food. Good technical support. Healthy Team Interactions.

Academic courses relevant to the project: Computer Arch. C++. Verilog. Digital Design.

Name: EEGA AVINASH (2013B1A30900G)

Student Write-up

Short Summary of work done during PS-II For the first 2 months I worked on MISRA C guidelines and modified the Dynamic Code Optimiser's code base and made it MISRA standard compliant. Next few months my work is mostly writing checkers in Python for pre boot, boot and power gating sequences for all cores and clusters in Carmel CPU. Next task is to write an ARM assembly code that can implement all boot and power management tests of Carmel CPU at EL3, EL2, EL1 exception levels. Finally, I have written new checkers and tests for boot and power management to check and improve the line, branch, and code coverage.

Tools used (Development tools - H/w, S/w): ARM simulator, various NVIDIA proprietary tools, C programming, Python scripting

Objectives of the project: CPU safety verification

Major Learning Outcomes: Deep understanding of CPU Architecture, ARMv8-A arch64.

Brief Description of working environment, expectations from the company: Working environment is awesome. I am under CPU team. All employees are very friendly and helpful. To learn something new at NVIDIA, all you have to do is just ask. Managers and mentors encourage you to learn new things. One thing that impressed me here is there is no restriction on programming language to code. All they needed is to get the task done. Knowledge in Computer architecture and Embedded systems is mandatory. Knowing about ARM arch is an advantage if you are interested in CPU team. You should be a quick learner. At least be thorough with one scripting language and one coding language.

Academic courses relevant to the project: Computer Architecture, Embedded systems, OS

Name: Rishabh Bhargav (2016H1230025G)

Student Write-up

Short Summary of work done during PS-II: I was assigned a project to build a test generator file with a new testbench flow involving performance verification of memory subsystems. I was responsible for creating test stimulus from a GPU client that could send read, write and mixed traffic requests and recording their transaction time for performance estimation.

Tools used (Development tools - H/w, S/w): Perfgen and other Nvidia specific tools.

Objectives of the project: Performance Verification of Memory Subsystems for GPU chips.

Major Learning Outcomes: Major outcomes involve understanding of the testbench structure for performance verification for various operations on DRAM and cache.

Brief Description of working environment, expectations from the company: Working environment which encourages learning and implementation of personal ideas for mutual benefit.

Academic courses relevant to the project: Computer Architecture and Object-oriented programming skills.

Name: Satyam Sinha (2014A3PS0164P)

Student Write-up

Short Summary of work done during PS-II: This project was done as a part of the CPU team at Nvidia. The project was carried out in two subdomains. It firstly involved making pre-developed libraries in C language compliant with MISRA guidelines, which have been developed for ensuring safety and reliability in the application developed for any system. Secondly, it focused on validating RAS (Reliability, Availability and Serviceability) Architecture that detects, handles and reports errors on a hardware level.

Tools used (Development tools - H/w, S/w): C, Python, Perl, Perforce, ARMv8 assembly language

Objectives of the project: Making pre-developed libraries in C language compliant with MISRA guidelines and validating RAS Architecture

Major Learning Outcomes: 1) Got a glimpse of programming in ARMv8 ISA, having to develop basic codes using the same

2) Learnt using Perforce as a version control system, which serves to be of great help especially when large chunks of data are to be accessed by multiple users

3) Learnt MISRA C, which is of great importance when safety comes into picture, just as in the case of Nvidia which is developing processors for usage in self driving cars

4) Learnt how RAS Architecture handles the errors at hardware level for improving the reliability, availability as well as serviceability of the CPU

Brief Description of working environment, expectations from the company: Great working environment, a lot of opportunity for growth, always encouraged to be innovative, think big, and create something new. My mentors were very helpful and helped me in learning a lot about the topics I was working in. Finally, a good place to intern with good prospects of converting into a full time employee as well.

Academic courses relevant to the project: Computer Architecture, Digital Design.

Name: Aayush Gupta (2014A8PS0443P)

Student Write-up

Short Summary of work done during PS-II: The project focuses on the design of Tegra System-on-Chip (SOC) series of NVIDIA. The specific focus is on the design of Memory Sub-System for the SOC, the way memory interacts with various clients (such as display, CPU, GPU, various I/O devices etc.), such that each client gets the required bandwidth of memory access for its proper functioning. This requires the proper understanding of architecture and functioning of various major constituent

components, such as the DRAM Interface, System Memory Management Unit (SMMU), PLL + Clock Generation & Distribution etc. It also requires an understanding of various issues which need to be taken care of, for accurate and secure transfer of data to and from memory, such as Clock Domain Crossing (CDC), Error Correction Codes (ECC), Proper Encryption & Decryption, I/O Coherency, and Security Checks. The project also requires working knowledge

of various EDA tools, softwares and programming languages used for verification and analysis of various errors that can be encountered in the Memory Sub System Design.

Tools used (Development tools - H/w, S/w): Perl, Meridian CDC

Objectives of the project: The design and architecture of the various components of Memory Sub-System, and the way they function.

Major Learning Outcomes: The working environment of the company is great, all the people are very friendly and helping. The expectations of the company are that you should be proactive, and should be thorough with your basics.

Brief Description of working environment, expectations from the company: Great working environment, a lot of opportunity for growth, always encouraged to be innovative, think big, and create

something new. My mentors were very helpful and helped me in learning a lot about the topics I was working in. Finally, a good place to intern with good prospects of converting into a full time employee as well.

Academic courses relevant to the project: Digital Design, Computer Architecture

Name: Parima Mehta (2014A8PS0280H)

Student Write-up

Short Summary of work done during PS-II: I got the opportunity to intern in the CPU team at NVIDIA. I spent my initial days getting familiar with UNIX, Perforce and MISRA - Motor Industry Software Reliability Association - a C coding standard proposed to enforce safe and reliable software coding practices for the automotive industry. Dynamic Code Optimizer (DCO) is a software layer that runs on top of CPU hardware and is intended to be used in automobiles. Majority of my work for DCO Safety required understanding the rationale behind the rules/guidelines proposed by MISRA along with the intent of the code and accordingly making the DCO safety compliant. After working on DCO Safety for the first two months, I started my work on DCO verification alongside. I primarily worked on triaging failed bins from regressions stimulated by Dynamic Random Generator and AVS (ARM Validation Suite). It helped me gain insight into the ARM architecture, the DCO code base and its functionality as well as the ARM Simulator code- which is the golden reference for verifying DCO functionality. This in turn helped me contribute towards writing as well as fixing the ARM Simulator code and proposing fixes for DCO faults. Apart from this, I contributed in writing self-checking tests for AArch32 and AArch64 CPUID registers.

Tools used (Development tools - H/w, S/w): Confidential- Tools developed in house

Objectives of the project: CPU Safety and Verification

Major Learning Outcomes: Got an insight into the design and verification process of CPUs developed by NVIDIA. Got a better understanding of the ARM architecture, Simulator as well as the Dynamic code optimiser code base.

Brief Description of working environment, expectations from the company: The work culture at NVIDIA is very flexible. The best thing I liked during my internship period was that the entire team works as a unit- people are ready to help each other, clarify each others doubts, as and when needed. There are discussions and brainstorming sessions weekly where the entire team participates to help each other grow. People are very friendly and approachable. All in all, it is more than one can ask for.

Academic courses relevant to the project: Computer Architecture, C programming, Operating Systems

Name: Divyang Wadhwani (2014A3PS0273G)

Student Write-up

Short Summary of work done during PS-II: Post-Silicon Validation of TEGRA PCIe, Pre-Silicon Verification of TEGRA PCIe

Tools used (Development tools - H/w, S/w): Basic linux and GVIM commands and linux hierarchical knowledge, Verilog, Python, Verdi

Objectives of the project: Validation and Verification of TEGRA PCIe

Major Learning Outcomes: Learnt in detail about the industrial PCIe port standard and it's specifications. Hands-on experience gained in post-silicon validation and pre-silicon verification of PCIe.

Brief Description of working environment, expectations from the company: Friendly and helpful work environment. People here are really understanding and will help you in any way possible.

Academic courses relevant to the project: Digital Design.

Name: Edwin Fremiot Mascarenhas (2013A3A70198G)

Student Write-up

Short Summary of work done during PS-II: GPUs contain several cores making a lot of memory requests. The time taken to service these requests could vary, depending on the application, whether the requested data is in cache or memory and so on. My primary task was to develop a tool to capture these latencies and analyze the results that I get from a performance point of view. Side by side I worked on another project related to the graphics pipeline where My task was to characterize workload & performance of different GPU units for certain game frames.

Tools used (Development tools - H/w, S/w): Python

Objectives of the project: 1. Develop a scalable modular tool for latency analysis 2. Extract GPU performance stats for graphics applications

Major Learning Outcomes: I learnt quite about the GPU architecture, particularly the memory subsystem. I also learnt about some graphics concepts and OpenGL. Since all the programming was done in Python, I learnt to apply several Python features to develop the tools involved.

Brief Description of working environment, expectations from the company: Python, Perl, C++, bash scripts) 90% of the time, for a task using about 10% of your electronics fundamentals (Mostly computer architecture in my case). Simply writing code, without the 10% will cut you off from the big picture & leave you dissatisfied. Also it will prevent you from coming up with some optimizations in the code you could do if you were aware of that. If you only know the 10%, you will spend most of your time with stackoverflow: your new best friend.

Academic courses relevant to the project: Digital design, Microprocessors, Analog & Digital VLSI design, Computer Architecture, Datastructures & Algorithms, Object Oriented Programming.

Name: santhosh kumar reddy pochana (2013B2A30887H)

Student Write-up

Short Summary of work done during PS-II: worked on SoC debugging tool like adding certain functionalities required to debug the SoC. Worked on testing CPU performance and comparing with arm cores .

Tools used (Development tools - H/w, S/w): visual studio

Objectives of the project: develop the SoC debug tool functionalities and test CPU performance

Major Learning Outcomes: perl, shell and linux

Brief Description of working environment, expectations from the company: working environment is very nice . you will feel Nvidia as extension of BITS. but dont expect that you are going to work on any project from scratch. Mostly works include on debugging .

Academic courses relevant to the project: OOPS and Computer Architecture

Name: Parthasarathi Kumar (2014A3PS0435H)

Student Write-up

Short Summary of work done during PS-II: I worked on test optimizations for the clocks team. These tests are part of the verification flow and the optimization I was mainly concerned was w.r.t code size reduction. Apart from this I had additional tasks of writing scripts for migration of files from one environment to another. Lastly I worked on clean-up of tests. This was related to hard-coded waits in tests. Here I was exposed to the ARM APB interface and the basic verification methodology.

Tools used (Development tools - H/w, S/w): C++ , Python

Objectives of the project: Test optimizations

Major Learning Outcomes: Got exposed to ARM APB interface and basic verification methodology. Also gained more experience in C++ and python coding .

Brief Description of working environment, expectations from the company: The working environment is conducive for a learning and interaction based working. People are friendly enough to cater to your doubts. One must be equipped with decent enough coding knowledge and some prior experience pf working in a LINUX environment. Other additional team/project related stuff can be learnt on the go while working here.

Academic courses relevant to the project: C-Programming , Object Oriented Programming , ADVD

Name: Mandeep (2014A3PS0014P)

Student Write-up

Short Summary of work done during PS-II: During my internship at Nvidia, I worked on two projects:

1. Compliance of DCO with MISRA C standards.
2. Boot and Power management

In the beginning, I worked on MISRA where my task was to make DCO files MISRA compliant. I was given with 21 MTS files, most of which are related to Boot and DMCE.

The first part of my project on Boot and Power management was to build a database, which would allow the safety team to view all the DCO functions that have been hit by power tests.

The second part is to write a python script for automating the verification of control registers'™ values while running Boot and Power tests.

Tools used (Development tools - H/w, S/w): Denver Simulator, Coverity

Objectives of the project: To make DCO files compliant with MISRA C standards and to write checkers for Boot and Power Tests

Major Learning Outcomes: Learned Python. Understood Boot sequences. Learnt about different Power states

Brief Description of working environment, expectations from the company: Working environment is very good and friendly. There is nothing I would like to change

Academic courses relevant to the project: Computer Architecture, Embedded Systems Design.

Name: Shivam Gupta (2014AAPS0872H)

Student Write-up

Short Summary of work done during PS-II: Modelling and verification of clock estimates including noise model, saturation, model, RTL to Silicon Correlation, Part to part variation, On chip variation and Margin models. It also included Infrastructure development and Verification Infrastructure improvement.

Tools used (Development tools - H/w, S/w): Python, Perl, Microsoft Office

Objectives of the project: Clock Estimation Methodologies

Major Learning Outcomes: Functioning of Transistor and logic with industry level details, Product Development Strategies, Upcoming market trends etc.

Brief Description of working environment, expectations from the company: Folks in Nvidia are very helpful and chill. There is no undue extra pressure at any point of time. People are willing to help in all ways. Teams provide adequate training material and organize knowledge transfer sessions to make you comfortable at work.

Academic courses relevant to the project: Analog and Digital VLSI Design, Electronic Devices, Programming, Computer Architecture.

Name: Rachit Ajitsaria (2014A8PS0870H)

Student Write-up

Short Summary of work done during PS-II: I was a part of the Platform and Silicon Solutions Group, Correlation Team. I was involved in the characterization, product definition and bringup of various Nvidia products. My main project involved making a tool to automate the process to verify if the final post silicon system specifications match the expected values.

Tools used (Development tools - H/w, S/w): Perl, Python, Bash, JavaScript, TITAN V.

Objectives of the project: My main project involved making a tool to automate the process to verify if the final post silicon system specifications match the expected values.

Major Learning Outcomes: Got to know about the complete chip cycle, understand the Nvidia Architecture and chip family, and the post silicon flow.

Brief Description of working environment, expectations from the company: Great working environment, with regular interactions. Projects are allotted based on company necessity. Work involvement is similar to regular employees.

Academic courses relevant to the project: Electronic Devices, Electrical Sciences, Digital Design.

Name: Spandan Kanu Kachhadia (2014A8PS0366G)

Student Write-up

Short Summary of work done during PS-II: Built an Application which automates connectivity check. The scripts were divided into 3 parts:- Core Application, Wrapper, and Safety route. Implemented many techniques which reduced time complexity (Software Cache, Black Box jump, and data acquisition staging), and Data storage techniques for entire connectivity tree. Safety wrapper included an interface between the user and core application, which had decoders and multiple identifiers to understand and provide requested inputs to the system. Routing algorithms included analyzers which worked on signal chain technique, the routing is based on the layer by layer connectivity assembling approach.

Tools used (Development tools - H/w, S/w): Jasper-Gold by Cadence.

Objectives of the project: Connectivity Verification between different blocks in the implemented design. As the designs are getting more and more complex every day, interconnectivity of different internal blocks become complex. Hence, TCL scripts are written to use tool commands of JasperGold (by Cadence) to automate the connectivity check of the blocks.

Major Learning Outcomes: Importance of Structural Connectivity in Verification

Brief Description of working environment, expectations from the company: I had an enriching experience at Nvidia. Initially, I started slow but finally I was capable of building an application which automated connectivity checks, with added analysers. This would not have been possible without continuous help from my mentors. My mentors were friendly, supportive and patient with me. Finally, my project turned out really good and it had many useful features.

All over, Nvidia's working environment was fascinating. Moreover, the working hours at Nvidia are flexible. At Nvidia, I always learned something new every day by interacting with the other employees. Finally, I realized that there may be many ways to complete a task, but doing it in a most efficient way is important. My internship experience will always be an integral part of my work experience.

Academic courses relevant to the project: Digital Design, Computer Programming.

Name: Rahul Agrawal (2014A8PS0701P)

Student Write-up

Short Summary of work done during PS-II: I worked on FPGA. The goal was to implement hybrid FPGA functionality on FPGA. In order to implement this I used many debugging tools and also run some tests to check the performance. Besides this I learnt many interesting stuff related to USB on FPGA. Also wrote some python scripts in order to automate the tests.

Tools used (Development tools - H/w, S/w): Linux, gtkwave.

Objectives of the project: To implement hybrid FPGA.

Major Learning Outcomes: Exposure to FPGA, Linux and various other debugging tools.

Scripting using python.

Brief Description of working environment, expectations from the company: Nvidia provided a professional working environment to explore my interests. Nvidia has flexible timing policy which shifts the focus from merely coming to office to achieving the targets and goals within time. It also provides free snacks and tea while working. There is also a recreation room having a TT table, carrom and a Foosball table which is open through out the day.

Academic courses relevant to the project: Computer Architecture, Digital Design.

Name: AVINASH KUMAR (2016H1230143P)

Student Write-up

Short Summary of work done during PS-II: I had an opportunity to learn circuit design concepts, architectural concepts and noise methodology during my internship. I have also got well-versed with tools like Virtuoso, Hspice, XA, waveview etc., in the process.

Tools used (Development tools - H/w, S/w): Virtuoso, Hspice, XA, wave view.

Objectives of the project: Timing and Noise analysis of Memory Subsystem.

Major Learning Outcomes: The project gave a feel for circuit design aspects/concepts, how sub blocks are created and the top level block (module) is created by repetitive instantiation of these sub-blocks in a structured (planned) way.

Brief Description of working environment, expectations from the company: I have gained tremendous knowledge and accomplished quality work at Nvidia Bangalore. My mentor and manager helped a lot through crossing every small hurdle. great work environment, flexible working hours, good cab facility etc.

Academic courses relevant to the project: VLSI DESIGN, VLSI ARCHITECTURE, ANALOG IC DESIGN.

Name: Prince Goyal (2014A3PS0229P)

Student Write-up

Short Summary of work done during PS-II: I worked on 2 different projects. My first project was related to some UVM RAL and scripting in perl. UVM is a verification methodology used as an industrial standard. I have got very comfortable with System Verilog during my stay at NVIDIA. My team XUSB is migrating from MKPRIV(a tool developed and used within NVIDIA) to MKPRIV2, MKPRIV gives an output of rspec files which is not the case with MKPRIV2 and XUSB uses these rspec files to generate register models. A script was written to generate rspec files while migrating from MKPRIV to MKPRIV2. My second project required skills like cpp, System Verilog, VIVA Syntax (VIVA is a tool which can compile perl and System verilog together, and makes writing codes in SV easier). Most of the information related to this project is confidential but I can say that debugging is something which I have learnt after this project.

Tools used (Development tools - H/w, S/w): VCS, VIVA, Perl, Linux.

Objectives of the project: Migration from tool MKRPIV to MKRPIV2, so I had to write a script to support some changes from former to Latter. My second project was to write a code in cpp to mimic the behavior of a RTL component of host controller.

Major Learning Outcomes: System Verilog, Debugging, Basic cpp.

Brief Description of working environment, expectations from the company: Nvidia has a great work environment. People are really friendly and happy to help. If you need something, you just go to the concerned person and ask for help, nothing formal required. No dress code and no questions on in/out time, you just expected to finish your work. Working from Home is really helpful option for people staying far from Nvidia.

Academic courses relevant to the project: System Verilog/Verilog from Computer Architecture, Basics of OOPs.

PS-II Station: Nvidia Graphics - Hardware , Hyderabad

Student

Name: AMARESWAR JAGANNADH VINUKONDA (2016H1240027H)

Student Write-up

Short Summary of work done during PS-II: I have been part of AUXP team where i was give domain of Design. I have been part of NESS explorations which may have futuristic usage if successful. I have written ness files and also have been part of bring-up. I have worked with a bit of perl and mostly on NESS tool.

Tools used (Development tools - H/w, S/w): perl and NVIDIA specific tools.

Objectives of the project: NESS exploration where we require knowledge of NVIDIA flow.

Major Learning Outcomes: A bit of verilog, perl language and also learning of NVIDIA tools.

Brief Description of working environment, expectations from the company: Initially i was confused with the terms they use and process of happening of things. It requires a bit of patience to learn and cope with the flow. Organisation has an excellent work culture and environment, employees are friendly. The provide food and transport too. Just come here with cool mind without tensions and try to understand the company's requirement and work accordingly.

Academic courses relevant to the project: Nothing to prepare well ahead for the work i was given a bit basic verilog would help and rest all requires learning the NVIDIA flow

PS-II Station: Nvidia Graphics - Hardware, Pune

Student

Name: Kush Agarwal (2014A8PS0419P)

Student Write-up

Short Summary of work done during PS-II: Regression framework development along with contribution towards development of latest tool.

Tools used (Development tools - H/w, S/w): CUDA, Makefiles, Python, C/C++ .

Objectives of the project: Develop a Regression framework to validate functioning of the tool.

Major Learning Outcomes: Exposure to CUDA and GPU architecture, Parallel processing, Profiling of CUDA applications.

Brief Description of working environment, expectations from the company: Awesome work culture, No peer pressure. Tasks assigned are expected to meet deadlines, Mentors available to help at each point.

Academic courses relevant to the project: Computer Architecture, C programming.

PS-II Station: Nvidia Graphics -Software, Bangalore

Student

Name: Abhinav Singh (2014A3PS0291G)

Student Write-up

Short Summary of work done during PS-II: The first task that was assigned was to upgrade the GCC version of an existing development environment for embedded software. The work involved understanding of toolchains, Yocto embedded development environment, bitbake etc. It was also focused on building custom recipes and layers for our embedded OS. The second task was to implement a Robotic Operating System environment for our embedded platform and this was to be done without a python dependency loop. This task required understanding of ROS and then further toolchains and SDK and how python is getting involved in the deepest layers of the build system. It was further to be tested with some built applications to check if the apps are able to run correctly or not without the python dependency loop.

Tools used (Development tools - H/w, S/w): Yocto- An Open Source Collaboration Project which provides an automated way of building a file system of your specification. ROS-Robot Operating System, provides an open source framework for communication between nodes.

Objectives of the project: Upgradation of toolchain (GCC) in the Yocto Build environment and implementing ROS in embedded environment.

Major Learning Outcomes: 1. Understood the working of a tool popular for building an Embedded System 2. Got familiar with ROS framework which introduced the concept of Node inter-communication 3. Became familiar with a professional environment

Brief Description of working environment, expectations from the company: Working environment in Nvidia is great. Mentors/Managers are very helpful in clearing of doubts and are patient enough for illustrating any new concepts that was needed in our work.

The work assigned to us was upgrading our preexisting toolchains which would help our team to collaborate more with other teams in Nvidia. Hence it helped us to realize that our work was important.

Academic courses relevant to the project: Embedded Systems.

Name: Shivi Mishra (2016H1400100P)

Student Write-up

Short Summary of work done during PS-II: For safety critical checks and safety diagnostics of the board being deployed within the cars for self-driving system of NVIDIA, a framework must be developed which will ensure that the on-board devices, hardware and software are functioning as expected and if an error occurs then those errors can be handled safely without interfering with the running state of the board. Thus, a detailed framework must be architected and implemented for software.

Tools used (Development tools - H/w, S/w): Linux, OS, C,ARM

Objectives of the project: Diagnostics and error handling module.

Major Learning Outcomes: IOCTls, QNX structure, Devctls, shared memory.

Brief Description of working environment, expectations from the company: Good fundamentals of OS and C programming. Working environment is startup based-fast, lots of learning, no official guidance but will get help if you ask for it. Helpful teammates and friendly managers.

Academic courses relevant to the project: OS, Device Drivers, Embedded Systems, Data Structures in C

Name: Aamod Kharb (2014A7PS0063P)

Student Write-up

Short Summary of work done during PS-II: NTG6 is a customer project by HARMAN which uses NVIDIA's chips and its NvMedia API's for its infotainment system. This project has already been delivered to the customer and hence there are various issues that come up from the customer's side. The project involves various changes to the existing code for feature enhancement purposes. It also requires various patches to be developed in case of any bugs related to the multimedia API's delivered by NVIDIA. The project also included adding support for all the RAW formats in the capture application run on the Xavier board. It also involved working on solving various customer issues which were on the INTEGRITY platform.

Tools used (Development tools - H/w, S/w): Vim, Linux, Ubuntu, Integrity, SOC's

Objectives of the project: Solving customer issues. Providing patches and new features for the existing projects. Development of test app for testing and debugging purposes.

Major Learning Outcomes: Working with a SOC. Working on Integrity. Details about CSI and Image Capture. Various different image capture formats and the key differences between them.

Brief Description of working environment, expectations from the company: Nvidia has a very good working environment with enough flexibility. Options like Work from home are useful. The people here are very helpful and go out of their way to provide help on issues. New joiners/interns are welcome and everyone helps them in getting acclimatized with the new working environment. Free lunch and afternoon snacks are a bonus. The company exceeded all my expectations which I originally had. The work was good and the interns were treated like regular employees and were given responsibilities and important work.

Academic courses relevant to the project: Embedded Systems, Operating Systems, Computer Architecture, DSA, C programming

Name: Nikita Sahasrabuddhe (2014A8TS0447P)

Student Write-up

Short Summary of work done during PS-II: The project involved work at the NvMedia layer of the automotive software stack. It revolved around the decoder component. As an initial phase of the project, an app for YUV color space conversion for single frames was developed. Unit tests for NvMedia video decoder were developed. This involved writing scripts to automate the testing. The next phase involved writing a unit test application for image decode APIs. Test cases were written to test and verify this app. This is now included as a feature by NvMedia team in the upcoming release. Parallel contributions were made in the enhancement of the image play and video sanity app by fixing a few bugs and making sure that documentation aligns with actual implementation. Bugs involved fixing corruption in display in image play, and CRC check fails and timing calculation issues in video sanity. The next phase involved having to add support for monochrome jpeg images in image jpeg app. Project also comprised of work on deprecating screen APIs for qnx from NvMedia as it has synchronization issues, thereby suggesting an alternate path which is a cleaner solution. As part of the project, MISRA C analysis for nvdec and nvenc had to be run, for which the Coverity tool was understood and used.

Tools used (Development tools - H/w, S/w): Nvidia Tegra SoCs, VIM, minicom

Objectives of the project: Enhancement of video decoder component in the automotive software stack.

Major Learning Outcomes: Video decode and encode process, codecs, MISRA safety standards

Brief Description of working environment, expectations from the company: Work culture at Nvidia is very comfortable. Mentors and managers are amiable and helpful. A great learning experience. Got to work on latest Nvidia Tegra SoCs! Good opportunity for people interested in embedded software, basically software development with a nice touch of how hardware accelerates functions. Very exciting work.

Academic courses relevant to the project: Operating systems, computer architecture, embedded systems, OOP

Name: Mayank Pandey (2014A3PS0202P)

Student Write-up

Short Summary of work done during PS-II: The first task that was assigned was to upgrade the GCC version of an existing development environment for embedded software. The work involved understanding of toolchains, Yocto embedded development environment, bitbake etc. It was also focused on building custom recipes and layers for our embedded OS. The second task was to implement a Robotic Operating System environment for our embedded platform and this was to be done without a python dependency loop. This task required understanding of ROS and then further toolchains and SDK and how python is getting involved in the deepest layers of the build system. It was further to be tested with some built applications to check if the apps are able to run correctly or not without the python dependency loop.

Tools used (Development tools - H/w, S/w): Yocto, Bitbake, Linux Shell Scripting, ROS.

Objectives of the project: Upgradation of toolchain (GCC) in the Yocto Build environment and implementing ROS in embedded environment.

Major Learning Outcomes: Video Understanding of toolchains, embedded OS environments, Robotic Operating System, recipes and compilers.

Brief Description of working environment, expectations from the company: The working environment at NVIDIA is very healthy. Interns were treated as employees and relevant projects which were directly related to the work of the company were assigned to interns. The timings are very flexible and employees work at their own pace. I was expecting some hands-on work with GPU software development and CUDA related work, but was assigned into QA team. But the work given was interesting and quite relevant to the work of the company. Even the work we have submitted is getting implemented in their build system and that is always an achievement for an intern. The facilities that are

provided to employees/interns are ample and a healthy work environment is maintained throughout the campus.

Academic courses relevant to the project: Embedded Software

Name: Ishant Goel (2014A3PS0272P)

Student Write-up

Short Summary of work done during PS-II: I was made to work on docker platform to build Nvidia applications on it and take use of docker's ability to virtualise the environment and also its ability to be easily scaled and deployed.

Tools used (Development tools - H/w, S/w): Docker, Jenkins.

Objectives of the project: To get rid of errors that arise, when an application is deployed, due to version mismatching.

Major Learning Outcomes: Docker – Platform.

Brief Description of working environment, expectations from the company: Nvidia, Bangalore has a very calm work environment besides being professional. Interns are given same space as given to full time employees and simultaneously treated as learning minds when deadlines are assigned.

Academic courses relevant to the project: Operating Systems, Object Oriented Programming

PS-II Station: Qualcomm India Pvt Ltd, Bangalore

Student

Name: PRAVEEN HOODA (2016H1400107P)

Student Write-up

Short Summary of work done during PS-II: The work demanded gaining new technical skills and time management. I was part of verification team handling verification of Bus Integration of SOCs. I was given tasks to automate the verification process reducing manual efforts. I learnt perl and python for automation. I successfully completed the basic tasks of automation. Next task was the automation and analysis of functional coverage which is very important in verification. I was able to automate it completely reducing lots of manual efforts. The mentor and team members were really helpful in guiding me. I was able to implement it for two projects. The learning environment in company was really awesome. There was a technical event too which also enhanced the skills of fast delivery with innovation. I am satisfied with the work given and the experience.

Tools used (Development tools - H/w, S/w): System Verilog, UVM, Perl, Python, Verilog.

Objectives of the project: To speed up verification process by automations like automating functional coverage.

Major Learning Outcomes: Learnt Perl, Python, Functional coverage, Toggle coverage, System Verilog and basics of UVM.

Brief Description of working environment, expectations from the company: The working environment was really good. My team and mentor was really helpful in imparting good knowledge of the tasks. There was no politics as such. The food was good and other sources to enjoy and relax also present. It was clear from the beginning the tasks I will be supporting and delivering. It was planned in a nice manner. The seniors were also helpful in giving us the required knowledge. Overall the environment was nice. There were technical and social events for us too planned nicely. I enjoyed my stay in the company

Academic courses relevant to the project: VLSI Design, VLSI Testing and Testability, Software for Embedded Systems(Python).

Name: Shruti R Chittawadgi Chittawadgi (2016H1400037G)

Student Write-up

Short Summary of work done during PS-II: Worked on Power Prediction tool for Hexagon DSP Core . Developed many automation scripts to make the process faster . Also worked on Performance study of L2 cache and verified if moving from 8 ways to 16 ways is feasible and concluded that existing 8 ways is doing well for the new core.

Tools used (Development tools - H/w, S/w): software : power artist , verdi . Scripting : Python and C.

Objectives of the project: To set up power prediction Tool for the new core and automate the few existing scripts and L2 Cache Performance study.

Major Learning Outcomes: Learnt Microarchitecture of the Hexagon DSP Core, Pipelining , Cache Architecture and Python scripting . Got hands on experience on Power Artist and Verdi tool.

Brief Description of working environment, expectations from the company: Very good environment.

Academic courses relevant to the project: VLSI Architecture, Advanced VLSI Architecture, Embedded System Design, Hardware- Software Co Design, VLSI Design.

Name: Abhijith Yadav Peddiboyina (2016H1230139P)

Student Write-up

Short Summary of work done during PS-II: Analyzed different cache levels in a processor. Studied the architecture and latency of different transactions in a cache. Proposed optimization techniques to reduce latency.

Tools used (Development tools - H/w, S/w): Verdi, SystemVerilog.

Objectives of the project: Understanding the architecture of existing cache memory. Understanding the latency of different transactions. Reducing latency of the transactions.

Major Learning Outcomes: Industry level cache architecture. TLB role in cache. Various minute details about transactions. CHI architecture.

Brief Description of working environment, expectations from the company: Qualcomm's working environment is very dynamic and exciting. The managers and other higher-ups are helpful, but busy. You are constantly surrounded by talk about new projects, new specifications, exciting work and there is a lot of office banter that happens everyday. So, it is an encouraging environment where one is always motivated to contribute and work towards new learning.

Academic courses relevant to the project: VLSI Design, VLSI Architecture, Advanced VLSI Architecture, Advanced VLSI Design.

Name: Seetha Lakshmi Radhakrishnan (2016H1230034G)

Student Write-up

Short Summary of work done during PS-II: Worked on automation of libgen team in QUALCOMM. Wrote scripts to generate netlist of cells to check the quality of a release. Worked on taking the netlist through the encounter flow.

Tools used (Development tools - H/w, S/w): Python, encounter, innovus, verilog.

Objectives of the project: Generation of various views to be used by the SoC teams like .lib,.lef,.def etc.

Major Learning Outcomes: insight into EDA flow, python,innovus tool.

Brief Description of working environment, expectations from the company: Training & development focused workplace where the team works as a single entity to achieve the goals on time. As an individual we are expected to proactively take on responsibilities to aid the team in faster meeting of targets.

Academic courses relevant to the project: VLSI design, CAD for IC, advanced VLSI design, VLSI test and testability, VLSI architecture.

Name: Tanya (2016H1400105P)

Student Write-up

Short Summary of work done during PS-II: The project aimed at automating the task of SoC block diagram creation and verification. The project was developed on completely new tool i.e. Enterprise Architect. This project helped in exploring many new architectural modelling languages, JavaScripts and Python scripts.

Tools used (Development tools - H/w, S/w): Enterprise architect tool, Javascripts, python scripts.

Objectives of the project: The project aims at reducing the manual, time consuming efforts used to construct a block diagram for a complete chip. It also generates the specification document for each module within the chip. The other key features are accuracy, low maintenance and automation.

Major Learning Outcomes: This project helped in exploring many new architectural modelling languages, JavaScripts and Python scripts. Other than work, this project helped me improving my other skills also like building new connections, better sense of teamwork, management skills.

Brief Description of working environment, expectations from the company: Qualcomm provided a positive, friendly and transparent working environment. It promoted creativity and out-of-the box thinking. The team members were very helpful. I expect it will provide me more opportunities to improve my technical knowledge and impart professional work ethics.

Academic courses relevant to the project: Software for embedded system, python scripting.

Name: Fiza Tariq (2016h1400104P)

Student Write-up

Short Summary of work done during PS-II: Working with a core IP team handling memory management unit (SMMU). Worked closely with Page tables used by the memory management unit.

Tools used (Development tools - H/w, S/w): Linux, GDB, Cpp.

Objectives of the project: to ramp up on the existing page table script and generate new page tables as required by the various teams and to start working on stream table generation for incoming project.

Major Learning Outcomes: Learnt how page table and MMU IP works.

Brief Description of working environment, expectations from the company: From day one, the environment was very friendly. I have been very lucky since I got an opportunity of working with an IP team which delivers globally. The team members, my mentor and my manager have been nothing but supportive and encouraging. In the coming time, I expect to learn every aspect of the excellent work taking place in the team.

Academic courses relevant to the project: Device Drivers, VLSI Arch.

PS-II Station: Qualcomm India Pvt Ltd, Hyderabad

Student

Name: Dinesh Kumar Sahu (2016H1030017G)

Student Write-up

Short Summary of work done during PS-II: Creation of Full stack for the Call flow data, Adding fields to JIRA json output, Kmeans clustering algorithm for the company log data.

Tools used (Development tools - H/w, S/w): Elasticsearch, Jira, NOSQL, express, Angular.

Objectives of the project: Creation of Full stack for the Call flow data.

Major Learning Outcomes: Creation of Full stack for the Call flow data.

Brief Description of working environment, expectations from the company: Elasticsearch, Jira, NOSQL, express, Angular.

Academic courses relevant to the project: Elasticsearch, Jira, NOSQL, express, Angular.

Name: Sahil Chandna (2016H1400101P)

Student Write-up

Short Summary of work done during PS-II: I am involved with the LTE Modem Firmware team , My project is titled as "Timeline Optimization of LTE Modem Firmware" . The Firmware is a Hard Real Time System with deadlines governed by the Technology e.g LTE , CDMA , 2G etc . Firmware has tasks to complete in a given time frame to meet itâ€™s deadline . My task is to plot the Time taken by a task in form of a Histograms to get an indication of which task might be overrunning itâ€™s time deadlines and also if some buffer can be provided for a task. The benefits derived from this project is faster Debugging of Crash related to Timeline Miss , Help in making Design Decision, identification of Bottleneck events .

Tools used (Development tools - H/w, S/w): Source Insight , Perforce , Trace 32, Suse Linux.

Objectives of the project: Timeline Optimization of LTE Modem Firmware.

Major Learning Outcomes: Physical Layer Implementation of the LTE , Wireless communication standards , Digital Communication.

Brief Description of working environment, expectations from the company: Working Environment at Qualcomm is filled with learning and positivity . For any problems we have Mentor and Manager

assigned to us who are helpful for day to day task and also provide guidance and feedback on the Project . Beside we have ample fun activities scheduled by the HR team during the internship like Movie trip, Team Outing , Work Anniversaries of employees , Dragathon Event etc .

Name: amandeep singh (2014A1PS0566H)

Student Write-up

Short Summary of work done during PS-II: The major task involved was utilization of their tools for running the machine learning models. Initially the work was learning about the tools and utilizing them in required manner. Later on, modules that were proposed to be used have to be validated. Final Task was to integrate all the modules in such way that it is able to run within the constraints.

Tools used (Development tools - H/w, S/w): SNPE, Python,C,C++,Java, Android Studio.

Objectives of the project: Develop Pipeline for Real-time Image Recogniton.

Major Learning Outcomes: Some Details about underlying system layer, Code Ethics, more about C,C++,java, python. Above all understanding of Android.

Brief Description of working environment, expectations from the company: Company is quite friendly and everyone is quite helpful. People are very hard working and efficient. The diverse group from different background adds icing to the cake.

Academic courses relevant to the project: Object Oriented Programming, C programming, Data Structures and Algorithms, Machine Learning.

Name: Santosh Krishnan (2016H1240026H)

Student Write-up

Short Summary of work done during PS-II: Team Assigned: Modem Firmware

1. Converted a decoder algorithm on the receiver side from C/C++ code to Octave.
2. Fixed a test framework of one of Qualcomm's product and added support for a new feature.
3. Wrote a Python script to better analyze conflict of RATs' in a multi-RAT scenario..

Tools used (Development tools - H/w, S/w): Languages: C, C++, Perl, Python, Octave. S/W: Perforce(for version control) and any text editor.

Objectives of the project: 1. Convert a decoder algorithm on the receiver side from C/C++ code to Octave. 2. Fix a test framework of one of Qualcomm's product and add support for a new feature. 3. Write a Python script to better analyze conflict of RATs' in a multi-RAT scenario.

Major Learning Outcomes: Qualcomm works very close to the Hardware, so how code is written and optimized for its HW. Ability to adapt to any technology or language.

Brief Description of working environment, expectations from the company: The people working here are quite friendly and helpful, but they expect a newcomer to be independent and self-driven.

They expect faster responses to bug fixes.

Academic courses relevant to the project: Digital Communication, Signal Processing and just about any Language specific course.

Name: Pronoy Barua (2016H1030015G)

Student Write-up

Short Summary of work done during PS-II: I worked with multiple teams for test automation.

For the Computer Vision team, I built a solution to detect camera tampering in surveillance cameras.

For the Camera team, I built a solution to conduct Image Post Processing tests outside controlled lab conditions. I also optimized the existing code for multi-core machines.

For the Video Systems team, I built a solution to detect compression artifacts in videos.

My work had a good mix of research and development.

Tools used (Development tools - H/w, S/w): Visual Studio, Anaconda, Jupyter Notebook, Sublime Text.

Objectives of the project: Camera Tamper Detection, Detection of compression artifacts in videos, Image Post Processing Test Framework.

Major Learning Outcomes: Learnt about image and video processing techniques.

Brief Description of working environment, expectations from the company: My manager and mentors were dedicated towards the project's success and guided me well. They expected me to work independently, and communicate well. The working environment is good, with nice colleagues, flexible working hours, and free food.

Academic courses relevant to the project: Digital Image Processing, Parallel Computing, Machine Learning, Computer Vision, Digital Signal Processing.

PS-II Station: Qualcomm India Pvt Ltd, Chennai

Student

Name: Kishore Kumar Rajadurai (2016H1400042G)

Student Write-up

Short Summary of work done during PS-II: Synthesize and integrate various parts such as ethernet, wi-fi, bluetooth, usb, sub-systems, core processor into a single SoC. The project also focuses on checking integrity of the synthesized design through formal verification and static timing analysis.

Tools used (Development tools - H/w, S/w): Cadence genus, Conformal LEC.

Objectives of the project: Complete synthesis and formal verification of the assigned blocks.

Major Learning Outcomes: During the course of internship, the following work was handled, Every block was synthesized stage-wise: RTL to Initial optimization, Initial optimization to Multibit optimization, Final optimization for Multibit optimized netlist + DFT insertion, Small blocks: FV was run between RTL and Final netlist (Less run time), Large blocks: FV was run stage-wise to make debug easier in case of any failures (Less run time as the block is split into stages), lib model related issues were resolved by using dummy models and tool related switches, FV failures were analyzed and resolved in detail for certain blocks using GUI, STA was performed for all the blocks and .libs were handed over to PD team along with constraints and final netlist. Tiling flow was learnt for the ongoing project, Conformal ECO was performed for any RTL updates for the ongoing project.

Brief Description of working environment, expectations from the company: Good working environment, extraordinary collection of online learning.

Academic courses relevant to the project: VLSI Design, Advanced VLSI Architecture, Circuit theory.

PS-II Station: Reflexis Systems India Pvt Ltd., Pune

Student

Name: Barkha Saxena (2014ABPS0735H)

Student Write-up

Short Summary of work done during PS-II: The team I was a part of was working on building a web application for automation of the deployment process of the product of the company. Initially I worked on Spring framework writing REST services for CRUD functionality of form data to and fro the database. I also worked on building the interface for collecting that data. After which the workflow part was allotted to me. It included making the step by step flow of the web app, sending notifications and reminders.

Tools used (Development tools - H/w, S/w): Spring Tool Suite (STS), Angular 5, Aquadata (for DB2).

Objectives of the project: To make a user interface (web app) for automation of the product deployment process at Reflexis.

Major Learning Outcomes: Learnt about end-to-end functioning of a web application. Experienced a glimpse of corporate life.

Brief Description of working environment, expectations from the company: Timings: 9:30-6:30 (compulsory to complete 9 hours) Amenities for interns: AC, Tea/coffee, PC and stationery. Mentor and employees of my team were really helpful and guided me wherever I needed them. Overall a decent workplace. The office is located in a beautiful premise in Magarpatta.

Academic courses relevant to the project: C programming, Object Oriented Programming, Data Structures and algorithms, DBMS.

Name: Arnav Gupta (2013B4A80664H)

Student Write-up

Short Summary of work done during PS-II: Data analytics - statistical matching including algorithms like 1) Mahalanobis Distance 2) Propensity Score Matching etc. Also worked with expressing parsing tools like ANTLR and Apache Velocity. Also looked into Google analytics and Adobe analytics.

Tools used (Development tools - H/w, S/w): Java, Python.

Objectives of the project: To help Reflexis Systems develop a product that could implement AB testing.

Major Learning Outcomes: Learned java and python and various algorithms.

Brief Description of working environment, expectations from the company: The company has a good environment as in the working hours and a little flexible, can wear casuals, breakfast and lunch provided at 25/70 respectively. They expect you to work for 8 hours and they would be happy with it. At least that's what's with my manager. Depends on manager to manager.

Academic courses relevant to the project: ML and Compilers.

Name: Nikhil Reddy Chalamalla (2014AAPS0264H)

Student Write-up

Short Summary of work done during PS-II: Development of a matching module to generate test and control set for conducting in-store experiments and reporting various inferences. Designing a database schema for time series store data and implementation using MongoDB. Literature survey on various templating engines to build a formula editor and PDDL solvers on matching optimisation problems. Clustering time series data for better matching.

Tools used (Development tools - H/w, S/w): PC, Python, MongoDB.

Objectives of the project: To develop a feature testing interface to aid users to conduct statically valid experiments and obtain meaningful inferences.

Major Learning Outcomes: Developed a statistical matching library based on Mahalanobis distance, Designed the database schema for time series data, I learnt how to cluster time series data using non euclidean distance metrics.

Brief Description of working environment, expectations from the company: Company doesn't expect students to know software development beforehand, they'll either give training or give ample time to learn the unknown and to contribute to the project, In spite of work being development and maintenance of proprietary software products there is a lot of learning involved.

Academic courses relevant to the project: CS F111, CS F213, CS F469.

PS-II Station: Samsung R &D Institute - Networks, Bangalore

Student

Name: Varun Goyal (2014A7PS0107G)

Student Write-up

Short Summary of work done during PS-II: I was in allotted intelligent services department. I was in Bixby team, which is Samsung's smart virtual assistant. My work was mainly based on NLP and transfer learning. I used transfer learning to improve the accuracy of sentiment analysis. The model is first trained on server on a large data set. After that several layers are transferred from the cloud to a local handset. The layers that are transferred are not trained further which saves the work of training a ML model on each handset from scratch that too with limited resources.

Tools used (Development tools - H/w, S/w): Python, keras, tensorflow, Matlab.

Objectives of the project: Use transfer learning to improve the accuracy of sentiment analysis. The model is first trained on server on a large data set.

Major Learning Outcomes: Learnt about AI, ML and how to deploy such technologies in actual products. (Bixby in S9).

Brief Description of working environment, expectations from the company: Every intern was given a laptop to work on. But due to security reasons we were not allowed to bring company laptops home (so no work from home). The company also has strict 45 hours a week work policy. Apart from that most of the projects were AI/ML based. The interviews are easy and straightforward and thus it is relatively easy to land a PPO.

Academic courses relevant to the project: Neural networks, machine learning, computer programming.

Name: Malak Shah (2014A3PS0222G)

Student Write-up

Short Summary of work done during PS-II: software testing automation, coverage reports, inter process communication.

Tools used (Development tools - H/w, S/w): Jenkins, protobuf, ansible, robot framework.

Objectives of the project: Software testing automation.

Major Learning Outcomes: Corporate work ethic.

Brief Description of working environment, expectations from the company: Requirement of 45 hours per week..

Name: Saksham Kumar (2016H1030081P)

Student Write-up

Short Summary of work done during PS-II: Work on communication module processor and real time operating system.

Tools used (Development tools - H/w, S/w): Python, R, internal tools.

Objectives of the project: Can not officially disclose due to agreement on confidentiality.

Major Learning Outcomes: Mobile communication, 4g, real time operating system, machine learning.

Brief Description of working environment, expectations from the company: Friendly. However there are restrictions.

Name: Rishab Sehra (2014A3PS0247P)

Student Write-up

Short Summary of work done during PS-II: Worked of 3D Point Cloud Compression (Video Compression) and Implemented research papers on projection of 3D Point Clouds. Also, implemented networks that process point clouds using CNN.

Tools used (Development tools - H/w, S/w): Softwares: MeshLab, Visual Studio; Languages - C++,Python.

Objectives of the project: Point Cloud Compression.

Major Learning Outcomes: Learnt using PCL Libraries, Working on 3D Videos and 3D Point Cloud Files, Working in a research institute having corporate environment.

Brief Description of working environment, expectations from the company: Strict rules of completing 45 hours every week inside of office, No work from home option.

Academic courses relevant to the project: Image and Video Processing, Machine Learning, Neural Networks.

Name: Abhishek Teotia (2014A7PS0145P)

Student Write-up

Short Summary of work done during PS-II: 1. Setup of softwares like Prometheus, Grafana etc. onto server (learnt about how to handle servers, and work on them)

2. Log collection in Docker for an application
3. Packet manipulation using Scapy
4. Made my own implementation of Hexdump function
5. Worked a little with protobuf

Tools used (Development tools - H/w, S/w): Karaf, Prometheus, Grafana, Docker, Scapy.

Objectives of the project: Containers are perfect replacement for VMs. They are light-weight, much faster and easy to use. It is a very hot technology these days, and many companies are opting for it. A huge amount of research is going on in this area as well. This project represents a study in this regard. Also, this report contains information on the work done with 5G team of Samsung.

Major Learning Outcomes: Socket Programming, Testing, Python programming.

Brief Description of working environment, expectations from the company: Very good, team was very helpful, company was very supportive and fun filled.

Academic courses relevant to the project: OS, Computer Networks

PS-II Station: Samsung Semiconductor India R&D Center , Bangalore

Student

Name: Rohan Banerjee (2013B5AA0869H)

Student Write-up

Short Summary of work done during PS-II: Developed a framework to design and integrate JTAG RTL with given specifications for an SoC.

Tools used (Development tools - H/w, S/w): Confidential.

Objectives of the project: Testing automation and more efficient tapeout of chip.

Major Learning Outcomes: RTL Design, Integration, Design for Testability.

Brief Description of working environment, expectations from the company: Helpful employees, approachable and driven manager. Company provides many perks in addition to the stipend, such as a bus service, subsidized gym and free (to a limit) and very tasty food

Academic courses relevant to the project: Digital Design, Analog and Digital VLSI Design, Computer Architecture

Name: Haroon Faisal (2014A3PS0242P)

Student Write-up

Short Summary of work done during PS-II: Worked with the design team which worked on hardware IP blocks for CMOS Image Sensor Hardware. Performed modifications to original IP block for optimizing performance. Subsequently also had to verify functionality and timing issues for the block.

Tools used (Development tools - H/w, S/w): Verilog (RTL design), Perl, Python (General Scripting).

Objectives of the project: Optimize hardware IP block. Verify timing and Functionality.

Major Learning Outcomes: Design and verification stage of the ASIC design flow.

Brief Description of working environment, expectations from the company: New and expanding team. The teams in SSIR are new and rapidly expanding in the scope and extent of their work. Hence, solid contribution and a lot of work is expected from each and every member of the team. Slacking off is really not tolerated. Everyone maintains a very strong work ethic.

Academic courses relevant to the project: Digital Design , Analog Electronics, Computer Architecture

Name: Harshit Gupta (2014A3PS0276P)

Student Write-up

Short Summary of work done during PS-II: Worked on the Physical Design flow of a block, from floorplan to routing optimization.

Tools used (Development tools - H/w, S/w): ICC-2 and Innovus.

Objectives of the project: To get acquainted with the flow of Physical Design.

Major Learning Outcomes: Understood the detailed flow of Physical Design.

Brief Description of working environment, expectations from the company: Work is good, as this is a growing company, there are opportunities to learn a lot more than in a well established company. Guidance was very good for me. The minimum work hours to be clocked per day are 6, but rarely do we work less than 10.

Academic courses relevant to the project: NA. It may be slightly related to what we learn from the course of ADVD.

PS-II Station: Sokrati Technologies Pvt. Ltd. , Pune

Student

Name: Dushyant Kumar (2014D2PS0993P)

Student Write-up

Short Summary of work done during PS-II: How to do marketing through Social media & how to handle the Clients in corporate world.

Tools used (Development tools - H/w, S/w): Facebook Ads Manger,Google Analytics,Excel.

Objectives of the project: To Give a overall learning about social media marketing.

Major Learning Outcomes: Client Handling in Meetings,Digital Marketing using social plateforms.

Brief Description of working environment, expectations from the company: Working Environment is Awesome.Working hours are little bit Stretching, however flexibility of time is there.

Academic courses relevant to the project: PAVA.

Name: Chinmay (2013B1A20241P)

Student Write-up

Short Summary of work done during PS-II: Solutioning includes making a proposal for a prospective client by auditing its present performance and proposing a plan with the estimated numbers for future taking all the proposed changes in strategies into account.

Onboarding is the transition of the client from the Business Development team to the Business Operations team. It includes multiple processes like immersion meeting, kick-off call etc with multiple teams involved and managing them through Freshdesk.

Tools used (Development tools - H/w, S/w): MS Excel.

Objectives of the project: Increase company's revenue.

Major Learning Outcomes: Business Development.

Brief Description of working environment, expectations from the company: Good Culture.

Name: Sangram Singh (2014B2PS0971P)

Student Write-up

Short Summary of work done during PS-II: The objective of this report is to give an overview of the best practices of Google online marketing, it helps a great deal in boosting the sales of the business & Basic SEO.

Tools used (Development tools - H/w, S/w): Google Adwords Editor, Google analytics.

Objectives of the project: Google Online Marketing

Major Learning Outcomes: You can get hands on experience of online sale & boost your business online through google adwords editor. You will get know proper use of google analytics . You will be perfect in MS excel after the ps. You will get best practices.

Brief Description of working environment, expectations from the company: You can get hands on experience of online sale & boost your business online through google adwords editor. You will get know proper use of google analytics . You will be perfect in MS excel after the ps. You will get best practices.

Academic courses relevant to the project: PAVA, Marketing strategy courses.

Name: Gaurav Jha (2013B5PS0752G)

Student Write-up

Short Summary of work done during PS-II: My role was that of a Business Analysts. I was the account manager of Clients like Swiggy, Voot and Big Basket, wherein I ran their Ad Campaign.

Tools used (Development tools - H/w, S/w): DoubleClickBidManager(DBM).

Objectives of the project: Running Ad Campaigns.

Major Learning Outcomes: Introduction to the world of Digital Marketing.

Brief Description of working environment, expectations from the company: Very Relaxed work environment. Open work space with Air Conditioning. There is never a tense mood across the office and the people are very friendly and helpful.

Academic courses relevant to the project: None in Particular. Basic Aptitude and Mathematics.

PS-II Station: Texas Instruments (I) Pvt. Ltd. -Analog, Bangalore

Student

Name: vebhav (2016H1230147P)

Student Write-up

Short Summary of work done during PS-II: There exists solution for testing the device using automatic test equipment (ATE). In this old and existed solution we make a use of FPGA as a buffer i.e. FPGA is used to slow down data rate because the rate at which an ATE accepts the data is very low and FPGA can accept the data at high rate. So if we move some part of testing in the FPGA then a significant test time can be saved because FPGA can execute the data at a very high clock rate

Tools used (Development tools - H/w, S/w): Cadence Allegro, Vivado 2016.1, Spotfire, Vivado SDK

Objectives of the project: Test time of an IC is reduced from 30 seconds to 25 seconds.

Major Learning Outcomes: Learn to operate ATE(automatic test equipment), learn to use Vivado SDK, Learn high speed PCB design.

Brief Description of working environment, expectations from the company: The environment is very friendly.You can ask question to anyone and everyone willing to help.

Academic courses relevant to the project: Reconfigurable computing, AICD

Name: Karan Chauhan (2014A3PS0195G)

Student Write-up

Short Summary of work done during PS-II: Volume production Test Data was analysed in an attempt to reduce test time.A Pareto Chart analyses was done to remove tests that were not catching any dies for an adventure and an audio amplifier. Then, a scriptwas written to check for tests that can be eliminated by reducing the limits of an earlier testfor an arc. Following which, correlation was used to eliminate tests done at different frequencies, at different control voltages and at different supplies. Next limits of tests were relaxed to check if wait time can be reduced. Then sameness was checked to attempt elimination of earlier test by correlating with a latter test. A template was created to give a top level view of test results to employees.

Tools used (Development tools - H/w, S/w): Spitfire, R and Python.

Objectives of the project: Analysing data of the tests applied on ICs with the aim of eliminating unnecessary tests to reduce test time.

Major Learning Outcomes: Statistics, spotfire, and R.

Brief Description of working environment, expectations from the company: Working environment is relaxed with no office politics. Everyone is helpful and the environment motivates one to work more.

Academic courses relevant to the project: Advanced statistics, R.

Name: Nikita Bisht (2013B4A30778P)

Student Write-up

Short Summary of work done during PS-II: Cell balancing is one of the main features of battery protection IC as it ensures that the battery life and safety is not compromised due to the presence of unbalanced cells in the battery pack. The project involved testing three different algorithms for cell balancing used in a battery monitoring and protection IC. Performing appropriate tests on the IC to ensure that the algorithms are working as expected. Performing tests for voltage and current faults was also part of the project. Designing virtual instruments, using LabVIEW, and test sequences, using TestStand which automate the lab tests and compilation of test results by controlling voltages sources, source meter etc. and make the validation process more efficient.

Tools used (Development tools - H/w, S/w): National Instruments LabVIEW and TestStand.

Objectives of the project: Validating all the different scenarios of cell balancing ; Testing fault conditions and powerup sequence of the device ; Automating tests and data collection using LabVIEW/TestStand.

Major Learning Outcomes: Operation of a low power battery protection IC, cell balancing algorithms, Test automation softwares like LabVIEW and TestStand, handling testing equipment in lab.

Brief Description of working environment, expectations from the company: Very good working environment, lots of scope of learning here for someone who is interested to work in VLSI industry.

Academic courses relevant to the project: Electrical Sciences, Microelectronics circuits, Analog Electronics

Name: Vaibhavi Shanbhag (2014A3PS0196G)

Student Write-up

Short Summary of work done during PS-II: Background study of current sensing techniques used in the market. Understanding the difference between high side and low side sensing techniques and their pros and cons. Understanding working on shunt based current sensing method. Verifying schematic, debugging design board and making necessary changes. Carrying out performance comparison of Hall sensor based high side sensing and shunt based low side sensing by carrying out performance testing. Background study of solar charge controllers available in the market. Studying Maximum power point tracking theory and battery charging theory. Studying TI designs based on MPPT charge controllers. Understanding the solar panel trend in the market. Designing the schematic for the design and preparing a layout for the same. Designing a firmware for the design. Carrying out performance testing and calculating efficiency of the charge controller and documenting the results.

Tools used (Development tools - H/w, S/w): Code composer studio for programming the microcontroller, Lab equipments like DSO, multimeter and function generator.

Objectives of the project: Designing a low cost, highly efficient solar charge controller and low side shunt based current sensing technique.

Major Learning Outcomes: Current sensing theory and methods, solar charge controller theory.

Details of papers/patents: TIDA-01598 : Reference design for low side, high bandwidth current amplification and error detection for solar inverters. & TIDA-00120R : Reference design for solar charge controllers for off grid applications.

Brief Description of working environment, expectations from the company: Supportive work environment providing necessary help for completing the project.

Academic courses relevant to the project: Power electronics, analog electronics, electrical sciences.

Name: Anand Ravi (2014AAPS0205H)

Student Write-up

Short Summary of work done during PS-II: Developed a software for controlling a robotic bench handler using Visual Studio and C#. The software abstracts the intricacies of sending commands to the

controller while providing a powerful back-end. It also includes features such as motion recording and playback, image processing and script editing.

Tools used (Development tools - H/w, S/w): Visual Studio, C#.

Objectives of the project: Developing software, testing it on existing devices.

Major Learning Outcomes: GUI design, embedded systems.

Brief Description of working environment, expectations from the company: Relaxed working environment with the correct amount of pressure put on interns. The expectations are managed very well. The work culture is amazing and the mentors are friendly as well.

Academic courses relevant to the project: Embedded systems

Name: Akhil Rajput (2014A3PS0280P)

Student Write-up

Short Summary of work done during PS-II: Overcome and Conquer the current day System Design Analysis Challenges using VSDP. Virtuoso System Design Platform (VSDP) provides the functionality to simulate an IC in context of its PCB and package parasitics. It is, primarily, a Virtuoso-centric design environment and a simulation solution that allows to define testbench that include the native IC and its corresponding package, PCB interconnect and component level parasitics.

Tools used (Development tools - H/w, S/w): Cadence Virtuoso, powerSI.

Objectives of the project: Overcome and Conquer the current day System Design Analysis Challenges using VSDP.

Major Learning Outcomes: How testing and verification of a real time project is done.

Brief Description of working environment, expectations from the company: A sound exposure to current latest technology in the market and how demands fit into the business world.

Academic courses relevant to the project: Microelectronic circuits, ADVD

Name: Lakshit Agrawal (2013B4A30744P)

Student Write-up

Short Summary of work done during PS-II: Making analog design test benches on Cadence Virtuoso- Debugging issues during Product cycle by Making necessary design changes. This includes accounting for unexpected extra currents and edit The design to match specification limits- Modelling board parasitics for The chip using simulated RLC values and integrating it into design using Virtuoso- Running simulations for every updated design, documenting The difference in results, accounting for The changes observed by probing different nodes and understanding The excess or lack of currents

Tools used (Development tools - H/w, S/w): Cadence virtuoso, Sim vision, Spotfire

Objectives of the project: Design robust level shifter for a wide voltage range.

Major Learning Outcomes: proficiency in Cadence tools like Virtuoso- understanding of design using MOSFETs- Overall understanding of work involved in a complete project cycle, The challenges faced and ways to find solution.

Brief Description of working environment, expectations from the company: Employees are always ready to help, especially teammates. Worklife balance is good. Availability of sports, games and music equipments allows to take breaks and maintain good efficiency. Knowing people from different teams helps to solve problems encountered during projects.

Academic courses relevant to the project: Microelectronics, Analog and digital VLSI design.

Name: Mukul Saxena (2014A3PS0820H)

Student Write-up

Short Summary of work done during PS-II: Developed a software in Astra for automating the AC validation process of high speed amplifiers.

Tools used (Development tools - H/w, S/w): C#,C.

Objectives of the project: To reduce the time required to perform characterization process of amplifiers.

Major Learning Outcomes: C#,C,LabView,Visual Studio.

Brief Description of working environment, expectations from the company: Working environment was relaxed and good. Everyone was ready to help whenever one needed it from them. The project assigned was really good as it had a lot of value and is going to make a big impact.

Academic courses relevant to the project: C programming, Analog Electronics, Microelectronics, Control Systems Lab.

PS-II Station: Texas Instruments (I) Pvt. Ltd. -Digital, Bangalore

Student

Name: Jayati Singh (2014A3PS0149G)

Student Write-up

Short Summary of work done during PS-II: T 1. Simulation models in Simplis/SIMetrix and PSpice for TI designs 2. Designed gate-drive power supply board - schematics, testing and validation.

Tools used (Development tools - H/w, S/w): TINA, Altium, Simplis/SIMetrix and PSpice.

Objectives of the project: 1. Simulation models in Simplis/SIMetrix and PSpice for TI designs 2. Designed gate-drive power supply board - schematics, testing and validation.

Major Learning Outcomes: working with different simulation softwares with ease, applying concepts studied in courses to design pcb.

Brief Description of working environment, expectations from the company: great work environment and work culture, with freedom to explore.

Academic courses relevant to the project: Power electronics, EM, Control systems, analog electronics.

PS-II Station: Xilinx India Technology Services Pvt. Ltd. , Hyderabad

Student

Name: SRIJA MALYALA (2013B2A30621H)

Student Write-up

Short Summary of work done during PS-II: I have in systems software, drivers team. I have mainly dealt with baremetal drivers. My project here was mostly on the timers and Freertos, the Real time OS.

Tools used (Development tools - H/w, S/w): Xilinx SDK, Vivado.

Objectives of the project: Basic Knowledge of Drivers and different OS.

Major Learning Outcomes: Knowledge of Linux, drivers, embedded C.

Brief Description of working environment, expectations from the company: Working environment at Xilinx is pretty good. There are restrictions for the timings, dress code.

Academic courses relevant to the project: C, Operating systems.

Name: Sarthak Pradhan (2013B5A80622G)

Student Write-up

Short Summary of work done during PS-II: I was in silicon characterization team. Created designs for silicon characterization. Generated the timing reports and checked the timing of different parameters of an FPGA device.

Tools used (Development tools - H/w, S/w): Vivado, C Shell, Perl, TCL, Verilog.

Objectives of the project: Creation of designs for Silicon characterization and STA.

Major Learning Outcomes: Learnt many different scripting languages, and designing techniques on a FPGA.

Brief Description of working environment, expectations from the company: Xilinx is a great place to work, the team members are very supportive. Small tasks are given in the beginning so that we learn the tools and languages. Later on some bigger tasks like creation of designs or writing scripts to automate certain processes are given. Major responsibilities will not be given as we are interns in the company. You get a good exposure to different people who are seniors and working in this industry since many years.

Academic courses relevant to the project: Digital Design, ADVD

Domain: Computer Science

PS-II Station: Adobe Systems, Noida

Student

Name: Kartik Sethi (2014A7PS0130H)

Student Write-up

Short Summary of work done during PS-II: I was a part of the Photoshop Express team. Adobe Photoshop Express is a free image editing and collage making mobile application from Adobe Systems Pvt. Ltd. It is one of the major products of Adobe in the mobile application development sector. The application is available on iOS, Android and Windows platforms. I was a part of the iOS team which works on the development of the application for the various Apple products. I was involved in the development of various cutting-edge features within the application which went on to be a part of multiple application releases. The overall experience of working in one of the major technology giants was overwhelming. I got to learn a lot, right from dissecting large complex codebases to understanding the complete product development cycle. The developers and peers at Adobe are always ready to help, in case of any problem. They encourage and motivate you to come out with your best in whatever is assigned to you. The knowledge and learnings which I have received from my mentor, senior colleagues and co-employees would surely help me in my future career endeavors. Adobe allowed me to view my project work, at different stages, which I developed from the scratch and which later became a part of their existing product. You definitely get a sense of achievement when you see your code being used in enhancing the user experience and the application getting higher ratings by the users.

Tools used (Development tools - H/w, S/w): Objective C, iOS Development, XCode

Objectives of the project: The major objective of the project was to develop and incorporate new robust, advanced features for the current Photoshop Express paradigm, to enhance user experience and to provide them with high end image editing utilities in their mobile phones itself.

Major Learning Outcomes: The project allowed me to learn various programming languages like Objective C, Swift and the inner working of iOS development. I got to learn the various APIs provided by Apple for the same. One of the major outcome was to get hands on experience in working on large codebases, developing good coding practices and getting the complete exposure in the end to end product development cycle.

Brief Description of working environment, expectations from the company: The working culture at Adobe is of highest order. The company nurtures its employees. Every one is ready to come forward for help. The interns are given projects which allow them to understand the complete knowhow of software development, right from understanding the current codebases to the final deployment of a product. The company doesn't differentiate between interns and its regular employees. The work assigned to an intern is at par with the regular employee of the company. There is no policy of fixed working hours. The timings are flexible. The company expects you to complete your work before the deadlines. The workload varies across the teams. The workload in my team was adequate enough for me to maintain a good work-life balance. There are various perks ranging from free food to shuttle services (to and from nearby metro stations to the campus), regular team outings, etc. Various sport related amenities like gym, basketball, volleyball, tennis courts are there within the campus premises. Various co-curricular and sports activities like table tennis/basketball tournaments, mini olympics, talent hunts, etc are organised at regular intervals. All in all, the company has a very positive working environment and is a good place to work at.

Academic courses relevant to the project: Relevant courses include C Programming, Data structures and algorithms, Machine Learning. Since most of my work was related to iOS development (in Objective C), I got to employ the core concepts of DSA. Some of the features I worked upon touched concepts from Machine Learning as well.

Name: Hiresht Gupta (2014A7PS0163P)

Student Write-up

Short Summary of work done during PS-II: The main purpose of my project, Deep Product Search was to build a recommendation system for fashion domain, that makes necessary recommendations by identifying different different clothing items and accessories present in the fashion image. I used regional CNNs to solve the problem of apparel localization. The second part of this problem was solved by generating image representations in a d-dimensional domain, that was capable of separating different sets of items by means of double hinge Siamese loss.

Tools used (Development tools - H/w, S/w): Tensorflow, Neural Networks

Objectives of the project: To identify different apparel items present in the fashion image, and recommend similar products.

Major Learning Outcomes: I got to learn a lot about CNNs, Regional CNNs and building a recommender system based on double hinge Siamese loss.

Brief Description of working environment, expectations from the company: Adobe is known for a nice work culture. There are no specific office timings and the people can utilize it as per their choice.

Academic courses relevant to the project: Machine Learning, Neural Networks and Fuzzy Logic

Name: Shubhi Rastogi (2013B3A70521P)

Student Write-up

Short Summary of work done during PS-II: Implemented features in Photoshop Express app for iOS.

Tools used (Development tools - H/w, S/w): Objective-C, XCode

Objectives of the project: Ship the implemented feature as a part of app release.

Major Learning Outcomes: App development, working in large software teams and code bases

Brief Description of working environment, expectations from the company: Relaxed working environment. Experienced and learned employees who are ready to help and provide guidance

Academic courses relevant to the project: Object Oriented Programming

PS-II Station: Adobe Systems, Bangalore

Student

Name: Budakausik Vedula (2014A7PS0167H)

Student Write-up

Short Summary of work done during PS-II: Adobe allows designers to publish the project created on their desktop application by generating an optimised data representation that is uploaded to Adobe's cloud storage. The contents of this online data bundle can be viewed by collaborators with access to its public link using the web application. Companies with stringent data-security policies can't keep their data on public cloud. So, they cannot adopt the existing cloud-based collaboration solution. To expand the user base in these enterprises, we created an offline collaboration solution that is independent of Adobe's cloud storage requirements.

Tools used (Development tools - H/w, S/w): Electron, React JS, JavaScript, WebAssembly

Objectives of the project: To create an offline publishing tool for Designers

Major Learning Outcomes: 1. Understanding the development process at Adobe. 2. Understanding and working the massive code base of the existing cloud based application. Documentation is sparse and therefore, a lot of effort went into understanding the nuances of the code. 3. Following proper coding conventions and writing production level code. 4. Understanding and working with React and Electron frameworks.

Brief Description of working environment, expectations from the company: I was given enough time to learn the skills required for my project. The environment here is very conducive towards learning. My mentor and manager were always there whenever i needed them. The working culture is great and all my team members were extremely professional. Work timings are very convenient too. Overall, It was a great experience to work at Adobe.

Academic courses relevant to the project: Data Structures and Algorithms, Software Engineering

Name: Amala Sanjay Deshmukh (2014A7PS0541H)

Student Write-up

Short Summary of work done during PS-II: Currently, Adobe's design application allows users to publish their work on its cloud services. The content of this online data bundle can be viewed by collaborators with access to its public link using the corresponding web application. This publishing mechanism, however, cannot be adopted by enterprises with stringent data security policies since they cannot keep

their data on public cloud systems. As a solution to this problem, we built an offline collaboration tool that is independent of Adobe's cloud storage services.

Tools used (Development tools - H/w, S/w): Electron, React JS, JavaScript, Webpack, Grunt

Objectives of the project: To build an offline publishing solution for designers

Major Learning Outcomes: Following were my major learning outcomes during PS-II:

1. Got familiarized with a product's life cycle in MNCs like Adobe - from conceptualization, design, development, testing, to release.
2. Understood the full-stack development process and learnt to use tools commonly used for sub-tasks like linting, building and packaging.
3. Learnt to navigate through and work with huge code bases.
4. Learnt to write production level code, following necessary coding conventions.
5. Learnt to use Electron, React and various other JavaScript frameworks and libraries.

Brief Description of working environment, expectations from the company: Adobe has a very constructive and positive working environment. The mentors and managers are actively involved in the project progress and provide necessary support whenever interns are blocked at any stage in the development process. Additionally, all employees are encouraged to participate in other activities like pro-bono projects, volunteering work for NGOs, cultural and sports events and societies, marathons, etc.

Academic courses relevant to the project: Data Structures and Algorithms, Software Engineering.

Name: Tanmaya Shekhar Dabral (2014A7PS0138H)

Student Write-up

Short Summary of work done during PS-II: The work done mainly focused on implementing and testing out various local caching strategies for online searches. This required working on internal Adobe tools (mostly C++) and also setting up certain servers locally as a part of a few proof of concepts (mostly in Java). The main focus was on testing out various cache invalidation strategies.

Tools used (Development tools - H/w, S/w): C++, Java, ElasticSearch, Sqlite, Internal Adobe tools

Objectives of the project: The objective of the project was to implement and test out various local caching strategies for online searches and also devising a cache invalidation algorithm.

Major Learning Outcomes: 1) Dealing with large (100k lines) code bases. 2) Information retrieval and caching mechanisms. 3) Writing industry grade code

Brief Description of working environment, expectations from the company: The working environment at Adobe was excellent, with an optimum mixture of work and play. At no point was the workload too extreme or too little. The mentors were readily approachable and helped out in case of any issues. The deadlines, even though strict, were far apart and provided much more than enough time to meet them.

Academic courses relevant to the project: Object Oriented Programming, Data Structures and Algorithms, Information Retrieval, Database Systems.

PS-II Station: Altisource Business Solutions, Bangalore

Student

Name: Tushar Gothankar (2014A8PS0420G)

Student Write-up

Short Summary of work done during PS-II: I had to design an alternative to a third party utility used by the organisation, which accepts a standard OCR file and extracts required data from it. At various stages the comparative performance and accuracy of the 2 utilities was made to measure progress.

Tools used (Development tools - H/w, S/w): Python, Open-CV

Objectives of the project: To design a system which accepts an incoming OCR pdf and extracts data from it.

Major Learning Outcomes: I learned how to systematically develop, and test an industrial application.

Brief Description of working environment, expectations from the company: Despite Altisource being a real estate corporate company, my project was managed as an independent R&D effort. The work objectives are well defined since day 1. However one is free to choose any method, technologies which seem relevant to achieve the goal. Thinking out-of-the-box is encouraged, while simultaneously considering aspects such as extension to future needs and generalization to all types of inputs is key.

Academic courses relevant to the project: Data Structures and Algorithms, Digital Image processing

Name: Ishmin Singh (2013B1A80782G)

Student Write-up

Short Summary of work done during PS-II: 1. Grafana Scripted Dashboard - To effectively monitor our production servers, I developed a production monitoring system PoC. Through it we can keep track of various metrics at the same time namely OS Stats (CPU, Memory, Disk, Networks), MySQL, HAProxy, Tomcat etc. And that too of multiple nodes and environments through templated and scripted dashboards. Also through this we can build system-level dynamic dashboards and reduce redundancy. 2. Springboot REST Application. To build a better and less cluttered user interface through Grafana, I developed a Spring Boot REST Application and used Simple JSON plugin to talk to Grafana and help display the required data from multiple Pinpoint APIs in Grafana Dashboards. It also displays call stacks and error links so as to identify and help solve complex errors and help the application thrive.

Tools used (Development tools - H/w, S/w): JavaScript, Ajax, JSON, Java, Springboot, AWS, Grafana, Opentsdb, Pinpoint

Objectives of the project: 1. Production Monitoring System PoC, 2. Building an Application Performance Management PoC using Grafana Simple JSON plugin and Spring Boot REST Application

Major Learning Outcomes: Java, JavaScript, Spring, working independently

Brief Description of working environment, expectations from the company: Corporate work culture. Interns are expected to work independently and given enough freedom to learn new things and experiment. The crowd is pretty good, but you would not find many young people around. I liked my project and my manager and got to learn a lot. Also, it's not difficult to get offered a full time position.

Academic courses relevant to the project: DSA, OOP, Networks, CP.

Name: Akash Thorat (2014AAPS263H)

Student Write-up

Short Summary of work done during PS-II: My work was to develop a Dynamic Form studio which will make it easy to create , update and delete dynamic forms. This studio will also show preview of the rendered form which will load from meta data.

Tools used (Development tools - H/w, S/w): Angular5, Javascript, Angular CLI

Objectives of the project: Create a tool which will simplify the process of form creation

Major Learning Outcomes: Agile Development, Working with different teams, adjusting to constantly changing requirements.

Brief Description of working environment, expectations from the company: Work environment is pretty good, everyone here is helpful. I expected a more challenging project but this one also had its own set of challenges. Also here we were given a whole project to ourself so it was onto us to develop the whole thing which was pretty good thing in itself.

Academic courses relevant to the project: DSA, Computer Programming

PS-II Station: Amazon Development Center, Bangalore

Student

Name: D Sai Haritha (2013B3A70368G)

Student Write-up

Short Summary of work done during PS-II: My internship involved two projects- 1) Providing verbose logging and a UI to visualize the team's product in action, 2) Experiment and productionize a novel text

extraction algorithm. This involved domain research, setting up an experiment framework to test the new algorithm with the existing one, data analysis to measure which also performed better, productionizing the new algorithm on Apache spark to handle scale and be fault tolerant.

Tools used (Development tools - H/w, S/w): Apache spark, Scala, Hadoop, AWS technologies, NodeJS

Objectives of the project: 1. Emit verbose logs and UI visualizer, 2. Improve existing text extraction algorithm in production.

Major Learning Outcomes: 1. I learnt how to handle big data, 2. How to write scalable, highly parallelizable code, 3. How to profile code to find bottlenecks, 4. Learnt how to make effective UI

Brief Description of working environment, expectations from the company: I was given complete ownership of my projects. I was to decide how to solve the problems and to actually solve them too. No hand-holding. Deadlines are not extremely strict. Code quality is very important. Code will be stress tested, it should not break. At worst, it should gracefully terminate.

Academic courses relevant to the project: Data mining, information retrieval, OOP, OS

Name: Amith Siddharth Murakonda (2014A7PS0118H)

Student Write-up

Short Summary of work done during PS-II: The project that I worked is related to Machine Translation, it involved constructing a new service that translates Amazon Prime video assets. The first month of PS was difficult since I had to transition from academic practices to industry practices. It involved learning new tools and coding practices that were not taught to us. Like achieving the object by writing less code and that is easy to read and manage by eliminating boilerplate code. During my PS I worked on projects that required me to learn new technologies like Gremlin Graph Language, google juice, which are industry level tools that are used in majority of the companies. With this newly procured knowledge/experience I believe that I can easily adjust to the corporate environment in the future.

Tools used (Development tools - H/w, S/w): Google Guice, Maven, ANT, Tomcat, AWS Java API

Objectives of the project: To construct a Machine Translation service

Major Learning Outcomes: Machine learning, and constructing manageable software

Brief Description of working environment, expectations from the company: The working environment is semi-rigid, where each person regardless of intern or full-timer will be given the same workload but with soft deadlines. During my tenure as an intern I was allotted 3 tasks though I fulfilled my deadlines, I was given space to learn and work simultaneously, along with helpful colleagues, this helped reap the maximum from my PS and help be industry ready.

Academic courses relevant to the project: Information Retrieval, Machine Learning, Software development

Name: Nupur Sawke (2016H1030035H)

Student Write-up

Short Summary of work done during PS-II: Payments services provides some services for clients and stakeholders that allows them control over customer's checkout experience by management of various payment contracts or affecting the flow of traffic during execution of payment operations. It allows clients to onboard and manage resources like payment methods, business profiles, etc. that store various configurations. It provides various onboarding touchpoints to clients. The permissions on who can manage these resources was handled using LDAP groups in the then existing system. Each resource has a set of configurations associated with it in which one can specify an LDAP group in order to define ownership for that resource. All the authorization checks on the customer wanting to perform various resource operations are performed by making membership checks to LDAP groups. If the user is a part of LDAP he/she is authorized to perform a certain operation. In order to address the pain points discussed above we came up with the idea of delegating permissions management to Bindles. A Bindle is a software application that acts as container for storing resources and managing them. This would remove the dependency of managing permissions for a resource from LDAP and the resource owner will have complete control on it.

Tools used (Development tools - H/w, S/w): Ruby on Rails, Java, Javascript

Objectives of the project: Building a feature to allow owners of the resource to manage permissions in a self-service manner

Major Learning Outcomes: In terms of technical learnings, I was introduced to different kinds of languages and frameworks. I got to learn about MVC architecture. I also learnt about various design

patterns while working on this project for example factory design pattern and singleton design pattern. Since all the code that needs to be delivered to the production has to be well tested I was learnt how to write different types of tests. At Amazon I learnt and experienced about various stages of software development cycle.

Brief Description of working environment, expectations from the company: Amazon has many interesting and challenging projects going on. I worked on about 4 major goals during my internship of which for two of them I was given complete ownership of the project. Right from on-boarding to communications with other related teams for getting required sign offs to pushing it to production I was given its complete responsibility. One of the most important things that I learnt while working on these goals was that every small decision you take makes a huge impact in determining the success of the project. It may happen that while looking for short term goals one may sometimes tend to overlook long term goals. This might later cause inconvenience and may require double effort on your part to rectify it. Hence, while designing one must always carefully consider whether what you are designing can help in a longer run, is extensible and reusable. Getting such responsibilities at intern level has helped me gain the much-needed self-confidence that is required when you enter Software industry. One important difference between college and companies is that companies expect you as a developer to maintain strict coding standards. This has helped me evolve as a coder and developer. Working at Amazon has also helped me evolve from an individual contributor to a person who works with the team and synchronizes with their work. Overall my experience at Amazon has been very fulfilling and enriching and I have learnt a lot during my five months here as an intern.

Academic courses relevant to the project: Object Oriented Programming, Web development.

Name: Vassalla Routray (2014A7PS0102G)

Student Write-up

Short Summary of work done during PS-II: Added parameters to APIs in Badger and created API to enable/disable processing of batches. Implemented versioning in BadgerService. Added regression tests for Create Account, Close Account and Ledger Updates(Events) in Monad for migration form Oracle Database to DynamoDB(Rolling Stone). Modified getChildEvents API to ensure Monad opconsole to work properly in dynamoDB dataspace. Worked on design for BatchSummary API and enabling time inputs while enable/disable batch jobs.

Tools used (Development tools - H/w, S/w): Amazon internal tools.

Objectives of the project: API parameter update and Validation on parameters,API to enable/disable processing of batches, Integration Testing for Replication Codes in MonadService.

Major Learning Outcomes: One main road block that I faced was while creating the api for enable/disable batch processing. This was when I figured out a possible edge case in the api's behavior. The issue was with ensuring that database writes are prevented from being overwritten by other writes. This was an existing issue within the whole service which I realized while deep diving. There were multiple options available like UpdateSkipNull Configuration while saving, versioning, etc. I decided to go ahead with versioning because of limitations with the other solutions. The field that was to be used as a version number had to be chosen. Implementing versioning meant every time an object was to be updated in the DynamoDB, it had to be retrieved, updated and then put back to ensure version number consistency. However the code base did not follow this logic and hence it required bit of an effort to change the code to accommodate the issues that popped up after versioning was introduced.

Academic courses relevant to the project: Operating Systems, DBMS.

Name: Samarth Goyal (2013B3A70510G)

Student Write-up

Short Summary of work done during PS-II: Developed a monitoring tool for a framework which aggregates pig jobs for operational efficiency. Also worked on the UI development for this framework upon completion of the monitoring tool. Work was purely development based also providing opportunity for designing after the requirements of the task at hand are clear. Complete ownership of the task allotted is encouraged.

Tools used (Development tools - H/w, S/w): Java, Pig, Hadoop, REST, JavaScript, ReactJS, GraphQL

Objectives of the project: To develop a monitoring tool for a framework which aggregates pig jobs for operational efficiency

Major Learning Outcomes: Learned design principles and good coding practices in Java. Learned about new and upcoming technologies for interacting with Databases. Helped to boost overall software development skills.

Brief Description of working environment, expectations from the company: Very health learning environment. Surrounded by really hard working and passionate people. The company provides ample opportunities to learn in diverse areas.

Academic courses relevant to the project: OOP, CS F111, DSA

Name: Himanshu Bagga (2013B4A70864H)

Student Write-up

Short Summary of work done during PS-II: My work revolved around machine learning and building a new model or generating advertisements. The model should predict the ad best as per the context of the page and history of user if available

Tools used (Development tools - H/w, S/w): Scala, Spark, AWS-EMR, AWS-S3

Objectives of the project: Creating a machine learning model for predicting ads

Major Learning Outcomes: Scala, functional programming, AWS services, spark

Brief Description of working environment, expectations from the company: No particulars office hours, you can choose to work anytime anywhere. Deadlines are a big deal and the work should be finished on time. No dress code too. The company's only emphasis is on quality of work and deadlines matched.

Academic courses relevant to the project: Machine Learning

Name: Gunjan Goel (2016H1030068P)

Student Write-up

Short Summary of work done during PS-II: I have been working with Amazon Pay and worked on building a new tool that will be used by across teams and helps in reducing the manual work of developers. I have now picked up a new task which is related to report generation for amazon pay merchants.

Tools used (Development tools - H/w, S/w): Amazon AWS services, IntelliJ, Ninja-dev sync, alexa

Objectives of the project: The project aims to reduce the mundane manual work and automate the work.

Major Learning Outcomes: Coding practices and scalable design

Brief Description of working environment, expectations from the company: There is lot of work at Amazon and deadlines are bit tight. But you can manage it.

Academic courses relevant to the project: Cloud Computing, Computer Networks

Name: Vaibhavi Sobti (2015H3130072H)

Student Write-up

Short Summary of work done during PS-II: The primary aim of the project was to ensure security and integrity of the new service being developed. Ensuring security helps establish trust between Amazon and its end customers and Amazon and its partner organization. Integration testing, if done extensively, helps in glitch free onboarding of partners to our APIs. This helps reduce bugs in final deliveries of the product. Further, automation of integration tests allows checking our product for all use cases with a single click, without any manual intervention. This saves a lot of time and effort of the developer and makes the process less cumbersome and less error-prone.

Tools used (Development tools - H/w, S/w): IntelliJ, Cucumber Framework, AWS API Gateway, AWS Lambda, AWS DynamoDB, Node.js

Objectives of the project: (a) To implement sandbox environment for our service in AWS.
(b) To write integration tests for the service being developed.

Major Learning Outcomes: 1. Even though I am yet to touch Amazon standards, I believe my coding style and skills have drastically improved in the past 1.5 months. 2. I have put my knowledge of cryptography and information security to the advantage of the team and I applied the knowledge I had gained in college to use here. 3. I have come to realize that what matters is the algorithm or the code logic that matters and not the language in which it is done. This has helped me quickly learn JavaScript and Cucumber tests and develop code in a new language very fast. 4. Documentation is the key at Amazon. I have learned the importance of writing good documents and I am trying to improve on the

same. 5. I was using AWS Lambda, API Gateway and DynamoDB, which I had never used in college. 6. I learnt about a new framework for testing and how integration tests work.

Brief Description of working environment, expectations from the company: Amazon was a great learning experience. It not only helped me put my existing knowledge to use, but has also expanded my knowledge in various domains in a short span of time. I put their leadership principles to practice and made sure that I was living up to their expectations. Further, I would like to highlight that I did my specialisation in Information Security due to which I was put in this project by my manager so that my interests align with the project I was assigned to. This made working at Amazon all the more interesting because I was working in a domain that I was not familiar with and yet I need to explore a lot. This way, I made use of my knowledge and learn more about the area that interests me.

Academic courses relevant to the project: Java, Cloud Computing, Software Engineering, Secure Software Engineering

PS-II Station: Amazon Development Center, Chennai

Student

Name: Reshu (2015H3130076H)

Student Write-up

Short Summary of work done during PS-II: I worked on the Device side settings of the Alexa Devices, mostly related to the gui of the devices.

Tools used (Development tools - H/w, S/w): Weblab ,gerrit6.

Objectives of the project: To enhance user experience based on the Weblab testing metrics to make informed decisions about which feature to be shown to user.

Major Learning Outcomes: Learned about the product development and device side programming.

Brief Description of working environment, expectations from the company: Working environment is very competitive and you get to work with really intelligent and hardworking people.

Academic courses relevant to the project: Android Development.

Name: Siddhesh Shrinivasan (2014A7PS0193H)

Student Write-up

Short Summary of work done during PS-II: Worked on an Amazon Specific Service , which uses Elasticsearch, REST APIs etc.

Tools used (Development tools - H/w, S/w): Java , Elasticsearch , Android Studio etc.

Objectives of the project: Creating a service that performs a few tasks , using elasticsearch as its database.

Major Learning Outcomes: Understood the professional way of how codes are written, different databases , how REST APIs work etc.

Brief Description of working environment, expectations from the company: Amazon Chennai has been a wonderful experience, although it depends on what team you are selected for. The timings here are flexible. The team members are very helpful. You will get to learn a lot here , especially if you are a fresher!

Academic courses relevant to the project: DSA , Discrete Structures , DAA , Java (OOP)

Name: Sarita Sharma (2016H1120163P)

Student Write-up

Short Summary of work done during PS-II: I was working in an Amazon internal project which dealt with automatic onboarding of various services in your service. I was required to develop a generic data dumper which could read information exposed by various APIs for a service and then display it to the user.

Tools used (Development tools - H/w, S/w): Java, Eider, ReactJS, Mockito, Junit

Objectives of the project: Automatic onboarding of various services in your service

Major Learning Outcomes: Learnt how to design an industry level project from the customer requirements and then implement it

Brief Description of working environment, expectations from the company: Show ownership for your work and complete the task assigned to you within the deadline.

Academic courses relevant to the project: Java, Machine learning.

Name: Sarita Sharma (2016H1120163P)

Student Write-up

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Major Learning Outcomes: Learnt how to design an industry level project from the customer requirements and then implement it

Brief Description of working environment, expectations from the company: Show ownership for your work and complete the task assigned to you within the deadline.

Academic courses relevant to the project: Java, Machine learning.

Name: Shobhik Bhadraray (2013B5A70665G)

Student Write-up

Short Summary of work done during PS-II: Traditional image search engines and filters work based on metadata associated with an image. Since metadata is prone to human error, a search mechanism based on such information inherently becomes prone to inaccuracies affecting the quality of results returned. Proposing a solution to this issue, we aim to implement an image search service that returns results based on either a combination of colors as given by the user or based on an input image itself. We achieve so by leveraging techniques from computer vision and make it scalable through a modular architecture and usage Elastic Search for storage of extracted features.

Tools used (Development tools - H/w, S/w): JQuery, Flask, Beautiful Soup, Elastic Search, Python libraries - OpenCV, Numpy, Scipy

Objectives of the project: Developing a complete web app to be the customer facing end of the service, Get live data to establish proof of concept of the service, debug the backend algorithm

Major Learning Outcomes: Learnt about image search engines that leverage computer vision techniques to perform an enhanced search. Learnt to use Flask for developing web applications.

Brief Description of working environment, expectations from the company: Informal work environment with flexible timings. Employees as Amazon are generally very enthusiastic about their work, coupling this with approachability, it leads to a constructive learning environment.

Academic courses relevant to the project: Java, Machine learning.

PS-II Station: Amazon Development Center, Hyderabad

Student

Name: Gaurav Sharma (2016H1030075P)

Student Write-up

Short Summary of work done during PS-II: The objective of this 6-month Internship is to create a Internal Operation Service for Amazon's Marketplace Platform, which allows it's users to do management operations on the platform. The operations include (but not limited to) creation, updating of test customers, start or stop certain workflows, peek into individual customer accounts, talk to third

party services manually, etc. The project is basically a full stack application (with more weight at backend) using JAVA, AWS services at backend (and middleware) and Amazon Internal UI Frameworks, JavaScript at the Frontend.

Tools used (Development tools - H/w, S/w): JAVA, AWS, Amazon Internal UI Frameworks, JavaScript at the Frontend, Python

Objectives of the project: Internal Operation Service Portal

Major Learning Outcomes: Continuous Development and Deployment

Brief Description of working environment, expectations from the company: Company expects us to be able to understand all aspects of Software Engineering and OOAD.

Academic courses relevant to the project: Algorithms, OOAD, Java, Python, Parallel Computing.

Name: Rangnani Aanchal Prakash (2016H1030039H)

Student Write-up

Short Summary of work done during PS-II: Project 1: Return Shipment Tracking - When customers order something, they can track their packages. But there's no way to track return packages currently. This project aimed at incorporating return tracking for MFN orders so that third party merchants can track the packages being returned to them which would help them initiate the refund of the returned package. Project 2 : Shipment Tracking Analytics - This project aimed at creating a dashboard to show seller and carrier performance which can be filtered on different metrics like prime packages, ship date, carrier and seller ID, etc. This would help Amazon in improving buyer's experience by giving smaller ranges of delivery dates.

Tools used (Development tools - H/w, S/w): Java, Eclipse

Objectives of the project: Project 1 : Return Shipment Tracking - To incorporate return tracking for MFN orders. Project 2 : Shipment Tracking Analytics - To launch a seller and carrier performance dashboard to ultimately improve the buyer's experience

Brief Description of working environment, expectations from the company: A lot to learn, good work environment.

Academic courses relevant to the project: Data Structures

Name: Maaz Mombasawala (2014A7PS0051P)

Student Write-up

Short Summary of work done during PS-II: Added check for document forgery detection : Infer country from GPS metadata of document, verify with document's specified country ; Evaluated a third party OCR for information extraction in official documents.

Tools used (Development tools - H/w, S/w): Java, Python, Excel, Mac OS, Linux, Maven, Gradle

Objectives of the project: Add new check for document forgery detection; Evaluate third party OCR

Major Learning Outcomes: Coding Skills, Good coding practices, Familiarity with build systems, Familiarity with deployment systems, Agile Software development

Brief Description of working environment, expectations from the company: Good work environment, helpful team, ample resources in internal wiki for help. Expectation from the company was to acquire experience of software development in industry, expectation was thoroughly met

Academic courses relevant to the project: Object Oriented Programming, Image Processing

Name: Vaibhav Agarwal (2013B3A70751P)

Student Write-up

Short Summary of work done during PS-II: Full Stack development, java and scala code stack, spring mvc

Tools used (Development tools - H/w, S/w): Spring MVC, java scala jsp

Objectives of the project: Migrate an amazon ecommerce page to new tech stack

Major Learning Outcomes: Coding practices, design patterns, unit level testing

Brief Description of working environment, expectations from the company: Long working hours but ample learning opportunities

Academic courses relevant to the project: Object Oriented Programming

Name: Aparajita (2016H1120165P)

Student Write-up

Short Summary of work done during PS-II: Worked on designing and end to end product development by taking ownership of complete product. Worked on designing high level solutions, coming up with low level design and coding the solution and deploying to productions

Tools used (Development tools - H/w, S/w): AWS SQS, S3 and SNS . Amazon internal tools.

Objectives of the project: Optimising the search for logs during debugging. Doing bulk update of records

Major Learning Outcomes: Designing approaches, problem solving techniques, customer obsession for better customer experience.

Brief Description of working environment, expectations from the company: Motivational and learning from teammates, innovative solution for workplace.

Academic courses relevant to the project: Data structures, algorithms, cloud computing, information retrieval.

Name: Vineeth Reddy Yarram (2016H1120172P)

Student Write-up

Short Summary of work done during PS-II: I worked on the 2 projects. First one is building a console for displaying the documents. Second project is a migration based project.

Tools used (Development tools - H/w, S/w): IntelliJ IDE, Java, React, Lambda, DynamoDB, SQS and internal tools

Objectives of the project: Enhancement and Migration of existing work

Major Learning Outcomes: New programming languages such as React and Redux and new environment using AWS.

Brief Description of working environment, expectations from the company: In Amazon the main focus is on their 14 core principals. They will evaluate based on these principals. The working environment is good and the mentor-ship model is very helpful for coping up to the new environment.

Academic courses relevant to the project: OOAD, Software Engineering, Software Architecture.

PS-II Station: Amazon Development Center, Gurgaon

Student

Name: Manpreet Singh Gulati (2016H1120158P)

Student Write-up

Short Summary of work done during PS-II: During my stay at Amazon, I have worked on multiple projects. The projects/tasks were challenging and provided a gateway to enhance and explore the skills required to work in a competitive workplace. Here is a brief overview of these projects/tasks-
Depreciation of web-labs: Web-labs are Amazon's way of carrying out A/B testing. My responsibility was to depreciate three of these web-labs as the intended features have been successfully deployed to production. LogAnalyser: I built a LogAnalyser for my team to carry out the post deployment analysis for

projects and make sure that the behavior is as expected. The main task was to extract some text fields from logs that were required by Machine Learning team to ensure that the model employed was working as expected. Proof of concept(PoC) for KNN: As a part of identifying the abusive customers, a variety of KNN algorithms needed to be tested for their usability for our use cases. As a part of this PoC, I was assigned the work to test the suitability of Faiss- Facebook Artificial Intelligence Similarity Search and Elasticsearch plugin- Fast-Elasticsearch- vector-scoring. My prior experience with Python really helped in quickly carrying out the PoC and delivering the results within required time frame. I got exposed to Elasticsearch, Kibana and Faiss during this task, which were completely new and challenging for me. Order Clustering Service: After the KNN PoC, the approach for identifying the abusive customers was finalized. The implementation of the service that would be used for this purpose in progress.

Tools used (Development tools - H/w, S/w): Bash Scripts, Python, Java, Logstash, Grok Debugger Elasticsearch, Faiss, Spring Framework, Mockito, AWS

Objectives of the project: Objectives of the project: 1> Depreciation of web-labs: Remove staling web-labs. 2> LogAnalyser: To analyze the logs required by team to carry post deployment analysis. 3> Proof of concept(PoC) for KNN. 4> Order Clustering Service: To identify abusive customer orders by clustering them together.

Major Learning Outcomes: Got to work with ELK (Elasticsearch, Logstash and Kibana) stack, Faiss and a lot of Amazon internal tools. Got a chance to showcase my existing knowledge of

Bash scripting and Python and to get a hands-on experience using Java Spring and Mockito framework. I also got an hand-on experience on AWS products and services. Also working with a lot of talented coworkers and learning from each one of them served as a great opportunity to enhance my skillset.

Brief Description of working environment, expectations from the company: Company expects one to learn quickly and be eager to experiment with new technology and challenges. Team members are really helpful and are willing to guide and support whenever required. There are a lot of Amazon internal tools that are required for software development and it takes some time to get equipped with these. Knowledge of Java and Spring framework is definitely a plus. The company strongly believes in a Day One culture which means that one is required to be proactive and excited for new opportunities and challenges. Overall my experience has been great and would cherish my stay here at Amazon forever.

Academic courses relevant to the project: SS G514 Object Oriented Analysis & Design, CS F415 Data Mining, CS G520 Advanced Data Mining

PS-II Station: Amazon Fulfillment Center, Bangalore

Student

Name: NEELANSH BHARTIYA (2014A1PS0680P)

Student Write-up

Short Summary of work done during PS-II: My projects were divided into two broad categories:
1. Identifying and fixing various improvement opportunities which were present in the existing system and increase the overall efficiency of Inbound Operations and Site. 2. Planning, designing, executing and ensuring successful launch of new Amazon.in ventures. **Tools used (Development tools - H/w, S/w):** Microsoft Excel and VBA, HTML, MySQL

Objectives of the project: 1. Rolling out of advanced and efficient mechanisms to improve operations efficiencies 2. Handling and managing launch of new ventures

Major Learning Outcomes: People Management, Crisis Management, Data Analytics, Better leadership and communication skills

Brief Description of working environment, expectations from the company: The work in the company demands good managerial skills. One has to be good in handling all sorts of situations and come out with the best possible solution. The working conditions are completely different from the regular corporate environment. You need to be very strong, both physically and mentally because you will have to move continuously from one part of the building to another and handle a lot of pressure. The learning opportunities at the station are humungous. The company will help you to become a good responsible leader and will help you in developing all your skills. The people in the workplace are really nice and will help you in all possible ways. Getting a managerial role being an intern is very rare and therefore this station is a perfect opportunity for all those who are looking forward to make their career in operations management.

PS-II Station: Amazon Fulfillment Center, Mumbai

Student

Name: Aditya Relhan (2014A4PS0378P)

Student Write-up

Short Summary of work done during PS-II: Work done is related to managing day to day operations. The internship is for the post of Area Manger Intern, who handles various associates working under him to meet day to day targets in productivity and quality. I have worked on improving productivity and quality in the Outbound operations.

Tools used (Development tools - H/w, S/w): Various tools were used by me for my projects and for data analysis. Predominantly Excel is used for data analysis, Macro and VBA coding, SQL Coding is also used to extract data from Data Warehouse tables. Few private software are also used in the company.

Objectives of the project: To improve pick productivity using direct and indirect methods to increase overall TPH.

Major Learning Outcomes: Working of operations in a company like Amazon. Data handling and data analysis skills using Excel. VBA and Macro Coding to construct tools to improve day to day operations. Developed people management skills by handling shifts and managing associates.

Details of papers/patents: Published 3 papers in the company on productivity and inventory placement strategy. Papers used are in One-Pager format.

Brief Description of working environment, expectations from the company: An Area Manager directly handles the shift, with predefined targets and goals. Working conditions are just like a shop floor, where instead of machines, we are constantly tracking goals and targets of associates to drive them to improve. Operations deals with interacting with a lot of individuals and improves inter personal skills. Working hours are somewhat hectic and the work requires us to be attentive and accurate with our decisions while giving us the opportunity to improve and implement changes.

Academic courses relevant to the project: Supply Chain Management, Sustainable Manufacturing

PS-II Station: American Express India, Bangalore

Student

Name: Varun Natu (2014A7PS0841H)

Student Write-up

Short Summary of work done during PS-II: In this project we sought to leverage distributed deep learning to significantly reduce neural network training times so as to increase modeller productivity. We experimented with both synchronous and asynchronous distributed training schemes and showed that both result in lesser training time without performance loss.

Tools used (Development tools - H/w, S/w): AWS, Keras, TensorFlow, SGE, Bash, UNIX

Objectives of the project: A proof of concept with regards to distributed deep learning in the perspective of American Express Needs

Major Learning Outcomes: Cluster Creation and Deployment. Deep Learning Systems. resource calibration for distributed systems.

Brief Description of working environment, expectations from the company: The working environment was very friendly, with fantastic mentors who took a lot of time to help and guide me. The company paid attention to my work and continuously made recommendations and critiques of my work. There was a definite structure and organisation to the internship program such as timely reviews and team meeting sessions

Academic courses relevant to the project: Artificial intelligence. Machine learning. Operating Systems. Computer Networks

PS-II Station: American Express India-Risk Information Management-Capabilities (RIM-C), Gurgaon

Student

Name: Eklavya Sharma (2014A7PS0130P)

Student Write-up

Short Summary of work done during PS-II: Used deep learning to estimate the probability of a credit-card applicant defaulting on the credit card he/she is applying for. The data used for classification consists of data from the application form and data from credit bureaus. The project involved multi-layer perceptrons, convolutional neural networks and a new architecture for dealing with semi-structuredness in data. In the beginning I learned about American Express and the credit-card economy. Then I learned about neural networks and CNNs. Then I worked on preprocessing data using PySpark. Then I trained neural networks using Keras.

Tools used (Development tools - H/w, S/w): Python, Pandas, Jupyter notebooks, PySpark, Keras

Objectives of the project: Used deep learning to estimate the probability of a credit-card applicant defaulting on the credit card he/she is applying for.

Major Learning Outcomes: Processing big data, Neural networks

Brief Description of working environment, expectations from the company: Working environment is very professional. There is a formal procedure for everything. There are unusually many restrictions, since being a financial company American Express has legal requirements on the security of its data and servers. People are friendly and helpful. There are a lot of facilities for employees (and interns), most important being cab facility for pickup and drop from home and non-expensive food. Working environment is good in terms of working space, seating, work computers, temperature, stationery, etc. There is flexibility in working hours. Employees (and interns) are not burdened with deadlines; they can work at a comfortable pace. Innovation and thinking by oneself is encouraged compared to just following orders. For engineering students, most work is related to machine learning and data processing. Most employees are not from a strong CS background, so advanced knowledge in math, CS and programming is not required/used at work, but a strong grasp on the basics of machine learning is highly desirable.

Academic courses relevant to the project: Machine Learning, Neural Networks

Name: Srajan Gupta (2014A7PS0088G)

Student Write-up

Short Summary of work done during PS-II: The work at Amex Gurgaon dealt primarily with Experimentation with Deep Learning techniques for use in risk management. Deep Learning is a paradigm of Machine Learning where the machine learns features and patterns from huge datasets without the programmer explicitly training the machine to do so. Since the data at Amex is huge as the credit card industry generates volumes of data, my job as an analyst was to experiment with various DL techniques like CNNs, LSTMs etc and find a model which helps in generating features which improve the performance of the existing models. Thus Deep Learning Experimentation and feature engineering were the main aspects of my work.

Tools used (Development tools - H/w, S/w): Keras with Theano, Pandas, HIVE, SQL, WinSCP, XGBOOST, AXGBOOST, Gradient Boosting Machine (GBM), Excel, Putty

Objectives of the project: Deep Learning Experimentations and Feature Engineering

Major Learning Outcomes: Interning at Amex has been a learning experience. I have learnt a lot about technology as well as the credit card industry. I learnt new Machine learning techniques and got hands on experience on how data is modelled and analysed in real world problems. What you do in a hypothetical problem statement in course Labs and what you do in the real world problems is very different, the challenges you face are entirely different. So Data Science enthusiasts can have a good time perfecting their analytical skills at Amex.

Brief Description of working environment, expectations from the company: Pros of Working at Amex: Great work culture and friendly team members. Flexibility with regards to shift timings. Good office space and infrastructure. Cons of Working at Amex: Since the data you deal with is highly sensitive and confidential, there are a number of regulations, approvals and access issues which you face. The cab transport system isn't that great and you spend a lot of time in cabs even when you stay nearby. But since it's free, it doesn't hurt!

Academic courses relevant to the project: Data Mining, ML, NNFL

~~PS-II Station: Analog Devices – Design and Simulation, Bangalore~~

Student

Name: Gaurva Bahirvani (2014A8PS853G)

Student Write-up

Short Summary of work done during PS-II: My work was mainly focused on extensive pre and post layout verification of a system to corroborate previous results and to check feasibility of some new design changes. I completed holistic verification of the chip which included monte carlo, corner PVT and some other technology specific simulations. The iterative verification led to few of very important design changes and was considered as the final pre tape out results.

Tools used (Development tools - H/w, S/w): Cadence, Adice, C.

Objectives of the project: This project deals with the schematic and post layout simulation on a Power on reset block.

Major Learning Outcomes: Extensive verification was a good learning opportunity to know about it's working, importance and methodologies and to get acquainted with ADICE, corner, Monte Carlo analysis. Learnt importance of extensive pre and post layout verification in design flow and developed an intuition for debugging during a verification process. Learnt about the stages of design flow in analog design from schematics to verification. On a non technical note, got acquainted with the work hierarchy and the work protocols of an Semiconductor industry which will be very fruitful in my full time role.

Brief Description of working environment, expectations from the company: The work hierarchy is well maintained, the projects given are quite decent and the work life balance is very good, mentor and project associates are very helpful which helps as intern to learn stuff at a steady pace. One thing which I would like them to improve is the stipend and the other facilities which they offer as benefits.

Academic courses relevant to the project: Analog electronics, ADVD, MICROELECTRONICS, programming basics.

Name: Arpita Gupta (2016H1400102P)

Student Write-up

Short Summary of work done during PS-II: Objects occupied in a room are being detected like windows, doors, table etc called room commissioning. Also people coming and going are detected using two different algorithms and compared the results that which will give more accuracy.

Tools used (Development tools - H/w, S/w): AWS server, caffe, CUDA, python

Objectives of the project: Room Commissioning

Major Learning Outcomes: Python skills, In depth knowledge of deep learning

Brief Description of working environment, expectations from the company: Environment is quite good. Manager is very supportive and helpful.

Academic courses relevant to the project: Artificial Neural Network.

Name: Vikram Venkatesh (2013B1A80839H)

Student Write-up

Short Summary of work done during PS-II: Developed a patch script and GUI for firmware simulation. These scripts are used to create patches for existing functions that are required to be ignored or overridden with different functions. The outputs are files write to RAM that contain the patch sequence data as well as the function data. All unused RAM addresses are appended with zeros. Additionally worked on modifying Tarmac files that are used to track and log all signals and transfers that occur during firmware simulation. Certain internal Tarmac module signals were not being recorded, which is what the modifications made possible. Also worked on creating some minor block for the verification models, as well as conversion of certain C-based test cases to Python-based.

Tools used (Development tools - H/w, S/w): Python, Python Tkinter, Verilog, System Verilog

Objectives of the project: -Develop patch script and GUI; -Modify the ARM Tarmac files to include internal signals in the log; -Create certain minor blocks for the verification model.

Major Learning Outcomes: Python scripting, Understanding of the digital verification model

Brief Description of working environment, expectations from the company: Comfortable and relaxed work environment. Friendly employees and managers. Company expectations are not very high, and none of the interns are over worked.

Academic courses relevant to the project: Digital Design, Microprocessors and interfacing.

PS-II Station: Analog Devices - Design Verification, Bangalore

Student

Name: Shashank R (2014A3PS0171P)

Student Write-up

Short Summary of work done during PS-II: The work required me to use machine learning to develop a hybrid classification algorithm with high accuracy. I was able to generate a python codes for reading the sensor values and use classification algorithm to detect grips. I worked on improving the accuracy which was increased from 61% to 83%. I also worked on detecting the grips under Temperature and Humidity varying circumstances.

Tools used (Development tools - H/w, S/w): Python, Machine Learning, Scikit Learn, Pycharm

Objectives of the project: As automated self-driving cars are becoming more commonplace, there is a need for technology which are capable of detecting driver's grip on the steering wheel. Hence, here we are trying to implement technology which can detect the grip with high accuracy using machine

learning. So our goal is to find the best machine learning algorithm and improve the accuracy of the algorithm.

Major Learning Outcomes: 1) The Algorithm require large amount of training data to form a robust classification algorithm. 2) The maximum possible accuracy reached was 83% hence we need to improve data capturing and sensor sensitivity. 3) It is important to choose classification algorithms with minimal run time since it might create delays in detection.

Brief Description of working environment, expectations from the company: Great working environment, flexible timings, great mentors and colleagues. They expect us to be willing to learn quickly and work hard.

Academic courses relevant to the project: Neural Network and Fuzzy Logic, Analog and Digital VLSI Design.

Name: Anand Mahadevan S S (2014A3PS0172P)

Student Write-up

Short Summary of work done during PS-II: Work mostly comprised of embedded programming. The main objective was to interface MEMS microphones with ADuCM4050 micro-controller. Initially, an analog microphone was interfaced using the ADC subsystem in the MCU. This was straight forward, although external hardware was required for impedance matching. Next was the PDM microphone which was not as straight forward in software to interface. A separate api/library had to written in order to demodulate the raw PDM data into pulse coded format. This library was then optimized for speed and low memory footprint. The code was tested on an add-on gear(shield) for the MCU successfully. A MEMS microphone based HVAC application was also made, which could detect obstacles in ventilation path by analyzing the spectrum of blade pass noise of exhaust fan. Finally, an application note was prepared, discussing the usage of the library for various applications.

Tools used (Development tools - H/w, S/w): C, Python, IAR Embedded Workbench, Logic Analyzers

Objectives of the project: To find out any specific external hardware requirements for interfacing MEMS microphones. In cases like the PDM microphones, develop a software library to handle the PDM to PCM

conversion. As an end product, write the complete firmware for interfacing MEMS microphones, specifically the PDM MEMS microphone so that the code is scalable, easily configurable and flexible.

Major Learning Outcomes: Code optimization, filter design techniques in C, Audio processing, DMA techniques for fast and seamless data transfer.

Brief Description of working environment, expectations from the company: Working environment is very good. The employees are very friendly and helpful. Collaborative working is one of the key features of the culture, although it is a little bit old-school. There is great work-life balance. Work is quite challenging and focuses on problem solving. As a fresher, you get to learn a lot of things. Expect a friendly HR, helpful co-workers and competitive work.

Academic courses relevant to the project: Digital Signal Processing, Embedded Systems Design, Microprocessors and Interfacing, Communication Systems.

PS-II Station: Analog Devices India Pvt Ltd -Quality management, Bangalore

Student

Name: Souradip Ghosh (2016H1490247P)

Student Write-up

Short Summary of work done during PS-II: Reviewing, auditing and automating processes related to automotive software development

Tools used (Development tools - H/w, S/w): Confluence, Jira, MS Project, MS Office, etc

Objectives of the project: To increase process efficiency and optimization

Major Learning Outcomes: End to end process management and project management activities especially pertaining to the automotive industry

Brief Description of working environment, expectations from the company: The company is completely dependent on engineering methods hence having some understanding of the core subjects help a lot. People are professional and learning is quite good.

Academic courses relevant to the project: DBMS, quantitative methods, project management, etc.

PS-II Station: Baldor Technologies Pvt Ltd, Mumbai

Student

Name: Mayank Jain (2014A4PS0836H)

Student Write-up

Short Summary of work done during PS-II: Process Design and Optimization

Tools used (Development tools - H/w, S/w): Power BI, Advanced Excel, Zoho Creator

Objectives of the project: Process Design and Optimization

Major Learning Outcomes: How to develop process for different clients and optimize the existing ones

Brief Description of working environment, expectations from the company: Start up culture, complete freedom, no hierarchy.

Name: Ramandeep Singh (2014ABPS0862P)

Student Write-up

Short Summary of work done during PS-II: I was a part of the Product Management team at Baldor. I was directly involved in building digital products that provide fraud-free user experience to end-customer. This involved taking repeated feedback from customers and business delivery teams and then converting those requirements to software specifications for the developers to work upon.

Tools used (Development tools - H/w, S/w): Power BI, Tableau, YouTrack, Google Docs

Objectives of the project: To build applications/products that enable risk-mitigation in transactions and provide best-user experience

Major Learning Outcomes: Understood The various stakeholders in a startup environment- Exposed to latest data warehousing platforms- Learnt BI tools like POWER BI and Tableau- Understood The various strategies in building a Product- Learnt how to communicate with clients- Developed proficiency in using Excel- Developed people Management Skills

Brief Description of working environment, expectations from the company: The company builds product that enable risk mitigation in transactions. The company has shown some tremendous growth, 20% y-o-y. They have been launching digital products across industry domains-insurance, motor, HR, finance etc. Baldor has recently planned to go overseas as well. The company also plans to introduce Machine Learning models to improve accuracy and eliminate errors due to human intervention.

PS-II Station: Blue Jeans Network India Pvt. Ltd., Bangalore

Student

Name: Hari S R (2014A7PS0003G)

Student Write-up

Short Summary of work done during PS-II: Debugging and Implementation of minor features for Command Center and Indigo, the external and internal analytics platform respectively provided for BlueJeans products

Tools used (Development tools - H/w, S/w): Unix based Development Machine, Java, JavaScript

Objectives of the project: Debugging and implementation of minor features

Major Learning Outcomes: Real world experience in Software Development practices

Brief Description of working environment, expectations from the company: Relaxed work environment with 3 week code sprints. Company expects minor work committed to be completed in these 3 weeks and any major changes to be split into minor milestones.

Academic courses relevant to the project: Object Oriented Programming, Database Systems

Name: Kush Dushyant Parikh (2014A7PS0086H)

Student Write-up

Short Summary of work done during PS-II: The projects I worked on fell in two major domains a one being DirectX a Windows Programming and other being iOS development. The DirectX project was a research oriented one and not much work existed that was done by previous employees while in iOS development we got a working app that could join calls, had the video pipeline set up, could receive screenshare from other devices etc. In the DirectX Project there was a requirement to replace the StretchRect API with our own shader implementation for image format conversion as the aforementioned API had been deprecated from DirectX version 11. In the iOS development project, we had to work on an existing app to fix bugs, enable features or make it available across multiple platforms. Overall, we implemented a Pixel Shader in HLSL for image format conversion that worked on the GPU and enables features like AVRoutePickerView and the content share pipeline on the iOS app.

Tools used (Development tools - H/w, S/w): Visual Studio, xCode, DirectX.

Objectives of the project: 1. To facilitate YUV-RGB image image format conversion on the GPU instead of the CPU 2. Perform bug fixes, feature enablements and fix build issues on the iOS Fiber App.

Major Learning Outcomes: On the technical side, exposure to Windows GPU Programming and iOS app development. On the non-technical side, working in teams, meeting deadlines, working on a research oriented project with no short term goals etc. were the major outcomes for me.

Brief Description of working environment, expectations from the company: The work environment is amazing. Blue Jeans works on the concept of open-offices i.e. no one has cubicles not even the top management of the company. The people are very helpful here and ready to help generally. The workflow and the way work is carried out depends on the manager of each team. Some teams strictly follow Scrum principles while others tend to modify a bit according to their product or convenience. Overall, working environment is great.

Name: Rishabh Mittar (2014A7PS0141P)

Student Write-up

Short Summary of work done during PS-II: The work involved solving day to day bugs fixes and doing feature improvements to main line BlueJeans video conferencing product.

Tools used (Development tools - H/w, S/w): Cmake,Binja,Build.gn,C++,C, libcurl,make, Jenkins,Xcode,protobuf.

Objectives of the project: To do timely bug fixes and feature improvements for the next product release.

Major Learning Outcomes: Writing production level code,learning various technologies used by the industry like Cmake,Binja,Build.gn,libcurl,make, Jenkins,Xcode,protobuf/

Brief Description of working environment, expectations from the company: The working environment was quite good. Everyone had a similar seating irrespective of the seniority and it kept the morale quite high to have to company head sitting next to you. The work life balance as great and there were regular parties and other events. There were also sports and other health related activities organised regularly. There were regular releases of the product keeping the work going along with all the other leisure activities.

Academic courses relevant to the project: Computer Programming, Data Structures and Algorithms, Networks, Operating Systems, Computer Architecture.

PS-II Station: Bundl Technologies Private Limited (Swiggy), Bangalore
Student

Name: Garima Yadav (2016H1490269P)

Student Write-up

Short Summary of work done during PS-II: I was in Central Supply Team, Initially i was working as kind of assistant to managers where whatever data the manager wants to see, i have to provide him. Later when i was not happy with my work, AVP of supply gave me a New Product Research project under the same manager which was better.

The overall work that i did was making PPT, collating data, calling to customers and restaurant owners, making documents, sending surveys to customers and collating responses.

Tools used (Development tools - H/w, S/w): Excel, SQL

Objectives of the project: To come up with better product idea

Major Learning Outcomes: Excel (Vlookup, Pivot tables, If statements), SQL

Brief Description of working environment, expectations from the company: I think your work experience will depend on the manager under which whom you are working. I worked under 3

managers among whom one was excellent mentor, one manager was micro managing and third one was average. Work Load was high sometimes and moderate sometimes.

Academic courses relevant to the project: Data Analytics

Name: Himanshu (2016H1490223P)

Student Write-up

Short Summary of work done during PS-II: I was responsible for increasing the OPD (Orders Per Day) at Swiggy in Breakfast (BF) and LateNight (LN) slots. For that, I prepared weekly reports (Biz Metrics) and raised the callouts with city teams and try to find out the reasons for the decline/increase in OPD. Then, I suggest the cities to replicate similar models in their cities. Apart from that, I am responsible for finding out the coupon burn rate for LN and BF slots and finding out the consequences due to provision of those coupons. Based on that, our team decides whether to continue providing those coupons to customers or not. I also called customers for finding out their use-cases for not ordering in BF slots despite opening the application from their devices. After that, I prepared a list of restaurants whom the call center people would call to find out whether their opening and closing timing was correct or not as per Zomato online listing so that they can be on-boarded by supply team. Apart from this, I deal with dynamic projects according to the company needs. Rains are a crucial season for Swiggy and it impedes growth due to efficiency losses due to navigation, movement and supply availability. Swiggy has done a lot of work over the last two seasons for handling rains especially the last rains which was well managed by Ops. However there was an impact on order loss and conversions due to efficiency changes being made.

Tools used (Development tools - H/w, S/w): SQL, Excel

Objectives of the project: Increase OPD, improve serviceability in rains

Major Learning Outcomes: Project management skills, strategy and execution making

Brief Description of working environment, expectations from the company: Workload is heavy but the work is enjoyable. Expectations are PPO.

Name: Geeta Bansal (2013B1A30862P)

Student Write-up

Short Summary of work done during PS-II: Swiggy has launched a new product called as Swiggy POP. It features daily changing scientifically curated menus everyday at affordable prices to the customers. My task was to come up with data supported rules/constraints and an algorithm which would allow us to automate the process of manual menu curation.

Tools used (Development tools - H/w, S/w): SQL, Excel, R

Objectives of the project: To automate the menu curation process

Major Learning Outcomes: People management, data understanding, process management, stakeholder management, data analysis

Brief Description of working environment, expectations from the company: The company and the team do not treat their interns as interns. We were treated in exactly the same manner, an employee in the company would be treated. But this goes true for the work as well. We were given independent projects and responsibility for the same which exponentially improved our management skills and other soft skills.

Academic courses relevant to the project: MySQL, Finance knowledge (not must)

PS-II Station: Cisco Systems (India) Pvt. Ltd - Software Engineering, Bangalore

Student

Name: Devamalya Hazra (2016H1120169P)

Student Write-up

Short Summary of work done during PS-II: As a part of the switching team at CISCO India, we have been responsible to developing security protocols that run on a network device, providing an additional layer of security to the network it belongs to. Our main job is to detect symptoms or Indications of Compromise (IOCs) that may be visible within the network and classify them as a threat.

Tools used (Development tools - H/w, S/w): Completely coded in C

Objectives of the project: Identify security threats in the network.

Major Learning Outcomes: Improved machine level coding. Understand features of a Network Switch. The various components within it. Also learned about traffic generation and simulation.

Brief Description of working environment, expectations from the company: Nice work culture, Good ambience. Excellent learning opportunity.

Academic courses relevant to the project: Computer Networks, Network Security.

Name: Suhina Pal (2016H1400038G)

Student Write-up

Short Summary of work done during PS-II: In the networking element (NE) the main components are Data Plane (DP) and Control Plane (CP). The CP's main functionality to manage the DP based on the CP protocol which use to interact with other NEs. The CP is S/W component and DP is H/W component (ASIC). During new feature development and bug fixes, the Development engineer (DE) use to run the Data Plane Simulation for the faster feature development and to fix the bugs. At the end of the simulation, then Data plane simulation produces lot of logs and in order to find the problems in the Data plane, the DE has to go through the logs and analyses the log manually. This is manual process and takes more time. In the Data path Simulation log analyzer, the log file would be splitted into multiple block in data plane and would be mapped into corresponding blocks in the DP via GUI. The objective of this project is to reduce the complexity of manual searching of these log files by developing a GUI in which the log files are presented in a more distinct manner. So the log file was splitted according to ASIC structure and mapped to the corresponding blocks.

Tools used (Development tools - H/w, S/w): Django, HTML, CSS; Python,jQuery

Objectives of the project: The objective of the project was to reduce the complexity of manual searching of the log files generated during the simulation of data plane by developing a GUI.

Major Learning Outcomes: Django framework was used for GUI development ,which uses python for backend and HTML,CSS,javascript for front end process.

Brief Description of working environment, expectations from the company: Good working environment, all team members are friendly and helpful.

Academic courses relevant to the project: Web development, Computer networks

Name: Aastha Sanghi (2016H1120159P)

Student Write-up

Short Summary of work done during PS-II: Upliftment and framework integration of UT automation for CISCO IOS-XR different components. CISCO XR framework is basis for the integration. C and python wrappers are used to achieve the same.

Tools used (Development tools - H/w, S/w): Python/C and cisco internal framework XR

Objectives of the project: UT automation upliftment for IOS_XR.

Major Learning Outcomes: Cisco Test Framework, how to integrate it and maximize automation to decrease Unit testing time during development cycle. Configuring Switch, its IP for particular network, policy creation and enforcement.

Brief Description of working environment, expectations from the company: Working environment is cisco is great. Great work life balance with very good work at the same time. Very good facilities in general. You have all you want and you have free will to call out anything which troubles you.

Academic courses relevant to the project: Computer Network, Software testing and operating system.

Name: Piyush Raghav (2016H1030078P)

Student Write-up

Short Summary of work done during PS-II: The work is related to develop a tool which helps the team in performing the deployment work in more efficient manner. The tool will identify the code changes done in repository and map the changes to particular function. Instead of running all the test cases, tool will run now only those mapped cases which have the impacted functionality.

Tools used (Development tools - H/w, S/w): Eclipse, JSP, Bootstrap, Java, POI

Objectives of the project: Improve efficiency of deployment process by reducing the sanity testing time.

Major Learning Outcomes: Learn about Bootstrap, POI and Cisco UCS server.

Brief Description of working environment, expectations from the company: Cisco is one of finest place to work. There is no pressure of work, the deadline is setup by us only. Mentors is helpful but we need to chase them for guidance. Overall its great experience with great team and great people.

Name: MD SAIF UL ISLAM (2016H1240031H)

Student Write-up

Short Summary of work done during PS-II: Developed a method of passive client identification which observes the contents of Wifi management frames in Association requests. We show that the management frames populated by modern Wifi chipsets and device drivers are quite distinguishable, making it possible in many cases to identify the model of the device.

Same approach has been further extended to classify access points (APs) by analyzing the contents of Beacon frames.

Tools used (Development tools - H/w, S/w): C, Redis Database, Lua script, Python, Kibana

Objectives of the project: Identification of rogue clients and AP

Major Learning Outcomes: Understanding of 802.11 frames in detail and how contents of layer 1 and layer2 frames can be applied to identify the client.

Brief Description of working environment, expectations from the company: Work environment was very friendly. Cisco is very good option to start your career with. Everybody is friendly and is ready to help you.

Academic courses relevant to the project: CCN

Name: Gaurav Sharma (2016H1240064P)

Student Write-up

Short Summary of work done during PS-II: Cisco needs a tool/app which compute the compatibility of IM with slots according to the rules provided by the designer. This has web page which is designed using HTML5, PHP and JavaScript. The backend coding is done in Python3.

Doing UT on the routers and features is a tedious and time consuming task. unWind! is a tool which does this very fast and efficiently. Modifying this tool for the RSP4 infra project can be very beneficial in perspective of time and cost.

Tools used (Development tools - H/w, S/w): Python, C

Objectives of the project: IM compatibility automation tool, UT automation

Major Learning Outcomes: python, Industrial exposure

Brief Description of working environment, expectations from the company: Healthy work environment, No restrictions. I hope they keep up the good work and stay in lead of their area of expertise.

Academic courses relevant to the project: Networking and Switching

Name: RAHUL GUPTA (2016H1240055P)

Student Write-up

Short Summary of work done during PS-II: Creating an instance on AWS using CISCO AMI image when the instance is down moving to another instance vice versa

Tools used (Development tools - H/w, S/w): AWS

Objectives of the project: Test HA (High Availability)

Major Learning Outcomes: Learned JavaScript, Python and AWS Software

Brief Description of working environment, expectations from the company: Working Environment is Excellent

Academic courses relevant to the project: Cloud Computing

Name: Mounesh (2016H1240024H)

Student Write-up

Short Summary of work done during PS-II: Client device identification in an Network is an important application as It has vast application including preventing unwanted client connecting to network. Dot 11 packets are collected and decoded to extract layer 1 and 2 parameters. From the decoded information. Analysis is done to identify manufacturer. All the decode information loaded into redis database. Fingerbank cloud is integrated to improve our search of devices joining a network. C program

is used to decode the dot 11 packets and lua script used for querying from redis database. And python script is used to load data from redis database to kibana to analyze the data graphically.

Tools used (Development tools - H/w, S/w): Redis Database, Kibana

Objectives of the project: Client Device Identification

Major Learning Outcomes: Dot 11 Parametres, 802.11a/b/g Protocol, Amazon Cloud Services,Redis Database

Brief Description of working environment, expectations from the company: It is good. I was given opportunity to try and learn new tools technology. Many online courses from recognized sources[Udemy] can be subscribed and learnt.

Academic courses relevant to the project: Computer Networks [802.11 wireless Protocol]

Name: Mithilesh Wachasunder (2016H1030076P)

Student Write-up

Short Summary of work done during PS-II: During the internship at Cisco, we developed a authentication tool for guest user access. The tool intended to have features of cross platform compliance, remembering guest users and providing security to the internal network. The temporary access was given by the help of TOTP algorithm which is time based OTP. The API was exhaustively tested and deployed on the Cisco's polaris testbed. There was also another project which was sort of open source mechanism to create the central repository to restrict the use of reserved IPv6 interface identifiers. There was also development of algorithm to generate the conflict free IP addresses.

Tools used (Development tools - H/w, S/w): Mainly working on Cisco Polaris switches; worked in Java, C and Python.

Objectives of the project: Develop the authentication application that can be used by Cisco's guest users for secure access

Major Learning Outcomes: Got a hold on Network Security concepts. Developed a working application that can be used by Cisco for it's guest users. Understood the working of Cisco authentication mechanisms

Brief Description of working environment, expectations from the company: The work culture at Cisco is good. Cisco permits interns and employees flexible working hours and work from home. Everyone here is on the first name basis, we can walk into any lead or expert anytime if we are stuck and they are indeed helpful. The code is well organized and Cisco has very good version control for the same. The organization of seminars, meetings and sync up are also very smoothly carried out , we are informed well in advance and priorities of all the participants are taken into consideration. Food is also very good and available at subsidized price to the Cisco employees. Cisco Bangalore campus is quite new and also one of best campuses you will find in the Bangalore.

Academic courses relevant to the project: Network Security, Computer Networks.

Name: Deepali Reddy (2013B2A70754H)

Student Write-up

Short Summary of work done during PS-II: The main aim of the project is to parse the Tech Support File and display the relevant information on an interactive GUI.

I have developed the Parser by making use of python for running the scripts at back end and used HTML, CSS for developing the front End and made use of Javascript for sending requests from the webpage to the server.

Tools used (Development tools - H/w, S/w): Python, Javascript, Html, CSS

Objectives of the project: To develop a tool to parse huge files and display information through an interactive GUI

Major Learning Outcomes: Learnt Python, Javascript and about the Cisco UCS Architecture

Brief Description of working environment, expectations from the company: Throughout the course of the project, my mentor and other team members helped me in understanding the working of the team. The expectations from the team was to have knowledge in networks and python.

Academic courses relevant to the project: Computer Networks.

Name: Arjun Dabra (2013B4A70716P)

Student Write-up

Short Summary of work done during PS-II: I worked on designing a centralized process monitoring tool which monitors processes/services on remote systems. Features of tool are 24 hour email check, immediate error reporting through emails, ability to start a service, providing health information about a script. Designing involved writing python programs for monitoring and writing linux .conf files which are services present in /etc/init folder.

Tools used (Development tools - H/w, S/w): Python, paramiko, schedule, smtplib python modules, linux services, html, servers.

Objectives of the project: Objective of the project was to help the team get rid of issue of their processes being killed by automatically restarting them and also informing them regarding any issue with some script through mails by designing a centralized process monitoring tool. Means from one local server only remote/local processes are monitored.

Major Learning Outcomes: Python, Python modules, SSH, Html.

Brief Description of working environment, expectations from the company: Working environment: Redhat Linux 6. Expectations from the company was that I build some tool so that they can monitor their scripts and processes on remote servers through some local server only as they didn't have access to IT systems and also their scripts and processes were often getting killed. Also tool should be able to tell the issue and also restart the service provided enough information is provided.

Academic courses relevant to the project: Not really any but it can be used as project in programming courses. Also Bits can also use it internally for monitoring their scripts.

Name: Shivi Gandhi (2016H1120155P)

Student Write-up

Short Summary of work done during PS-II: We had to decouple the various processes which run inside the switch and host one process on cloud and the other process will run on the switch. When a client

tries to connect to the network, there are a various things happening like authentication, authorization, accounting etc. and there are various mechanisms for each. So, we had to decouple these processes.

Tools used (Development tools - H/w, S/w): C, UCS, CISCO switches, Sockets in C

Objectives of the project: To decouple the different process running in the switch without too much dependency between decoupled processes

Major Learning Outcomes: Networks, that we learn theoretically as a subject, how it is applied for practical purposes. What is the practical use of each of the different components like switch, router etc. What are the different processes that run when any client tries to connect to the network and why each process is required.

Brief Description of working environment, expectations from the company: Working environment is very good. Flexible timings. What people are concerned here is work, it doesn't matter at what time you come and leave. But it leaves a good impression on the manager if you come daily. You can directly approach people who are higher in hierarchy. You can ask your doubts to anyone and they will be more than happy to help you. Overall, it was a good learning experience.

Academic courses relevant to the project: Computer Networks

Name: Priti Sharma (2016H1120168P)

Student Write-up

Short Summary of work done during PS-II: To validate virtual wan optimazion device on Suse Linux, Performance dashboard in Angular and PHP

Tools used (Development tools - H/w, S/w): Angular,PHP,L3 Switches,UCS,IXIA Traffic tool

Objectives of the project: To validate virtual wan optimizing device on Suse Linux, Performance dashboard in Angular and PHP

Major Learning Outcomes: Networking fundamentals practical learning, web development

Brief Description of working environment, expectations from the company: Work environment in cisco is very friendly, helpful Managers and mentors, additionally driving the things yourself.

Academic courses relevant to the project: Advanced Computer Network, Web Development, Switching, IOS

Name: Venkata Ramesh Reddy Ganapam (2016H1240063P)

Student Write-up

Short Summary of work done during PS-II: It's mainly about testing work required components of the CISCO , how to pass proper arguments. So that any code commit will pass all the test cases written for that component.

Do the automation of the above manual testing procedure, loading object files and any packages required for the router so that these things will rapid up the developed work done by the team.

Tools used (Development tools - H/w, S/w): cisco rotuer, cisco simlator (have the functionality of the router).

Objectives of the project: To test and automate cisco`s components.

Major Learning Outcomes: Processes of testing and automation

Details of papers/patents: CISCO`s wiki.

Brief Description of working environment, expectations from the company: In testing team will be expect 60 percent of line of coverage , and 35 percent of the branch coverage .In automation team will be expect to add dynamically any files or any packages.

Academic courses relevant to the project: Pure Networking and operating system.

Name: Vidit Chugh (2014AAPS0224H)

Student Write-up

Short Summary of work done during PS-II: Cloud computing has become prominent for today's businesses due to major advantages in on-demand services, resource-pooling, reliability and pay per use basis. These cloud models are beneficial for new startups and enterprises as they neither have to pay for

infrastructure or installation, nor do they require man power for its maintenance. But to avail these services, cloud providers have to face many challenges with high availability being a major concern. Our main aim was to achieve that in the cloud environment. Along with that, our team is working on a B2BUA product.

Tools used (Development tools - H/w, S/w): JSON, Protobuf, RabbitMQ, ZeroMQ, Wireshark, advanced C++

Objectives of the project: High availability framework for real time stateful cloud applications

Major Learning Outcomes: Obtaining sense of designing and implementing a project from scratch and how it fits in the real world domain of larger things.

Details of papers/patents: CISCO's wiki.

Brief Description of working environment, expectations from the company: Cisco has a great work environment. It really gives the flexibility and comfort to learn and work in a collaborative way. We get help from managers and mentors alike and ample guidance. Plus there's good food and team outings. The office has games for leisure. You get to meet people from San Hose too. I got to attend meetings with CTO and CEO so it was cool. They take care of their employess and interns a lot. MAC book PRO :)

Academic courses relevant to the project: Communication Networks, OOPs

Name: Kartikeya Gupta (2016H1120153P)

Student Write-up

Short Summary of work done during PS-II: Cisco provides robust network management applications for the enterprises to build, maintain and troubleshoot their complex network infrastructure. As part of DNA-C and Prime, my team is working is working to maintain different modules of Prime Infra which has been successfully running for past 10 years. My task is to improve the performance of logging of overall application. The motive is to store ASCII logs in a space efficient manner. It includes exploring different methods like compression and binary encoding techniques. I have applied both compression and encoding to achieve around 1:9 compression ratio. It is all based over Log4j logging framework for which I had to write a custom component to implement this functionality. I also worked on distributed logging i.e. OpenTracing, Jaegar.

Tools used (Development tools - H/w, S/w): Eclipse, Log4j, Slf4j, OpenTracing, OpenZipkin, Jaegar

Objectives of the project: Space optimization of Application Logs (Single & Distributed)

Major Learning Outcomes: Advanced Java Concepts, Kubernetes, APM, Dockers, Jaegar

Brief Description of working environment, expectations from the company: The working environment is quite relaxed and comfortable. They have activities oriented towards freshers which makes transition from college to office life seamless. The managers and technical leaders are quite proficient in what they do and also have lot of patience for freshers to get used to a certain kind of work flow that Cisco follows. They have good projects which they are ready to give to interns, so that some ideas can be discussed and incorporated in their applications, if it is really helpful.

Academic courses relevant to the project: Java Programming, Python Programming, Computer Networks, Operating Systems, Linux OS.

Name: Lakshay Modi (2013B1AA0355H)

Student Write-up

Short Summary of work done during PS-II: Worked on time synchronisation protocols PTP and NTP on cisco catalyst switches.

Tools used (Development tools - H/w, S/w): C programming

Objectives of the project: Develop a feature to synchronise the two clocks in cisco switches.

Major Learning Outcomes: Implemented clock synchronization in network switches and other basic networking concepts.

Brief Description of working environment, expectations from the company: 1) Perfect working culture. 2) No restrictions on timings (Just deliver the work assigned to you in time). 3) Not much of a workload. People are very helpful and will assist and guide you whenever you are stuck. 4) Project allotment will be random. But you will get a decent project to work on.

Academic courses relevant to the project: C programming, Computer networks

Name: Megha Dixit (2016H1250059P)

Student Write-up

Short Summary of work done during PS-II: The PS-II involved learning about open source technologies namely VPP, DPDK. The work was regarding the enhancement of the packet processing throughput and time minimization by incorporating these open source projects. The work also involved working on the proprietary Cisco IOS-XR for which I was nominated to undergo a 7 day long training with labwork and classroom. the training helped me greatly in my work at cisco. The works was on linux and followed by the implementation of the same on Cisco IOS-XR

Tools used (Development tools - H/w, S/w): CISCO IOS-XR, LINUX

Objectives of the project: STUDY OF ACCELERATION OF PACKET PROCESSING ALONGSIDE DPDK AND OTHER OPEN SOURCE TECHNIQUES

Major Learning Outcomes: Understanding how build systems work, tracing a build, implementation in two different os, understanding ios-xr in depth, understanding networking piciples concepts and basics

Brief Description of working environment, expectations from the company: The company is an excellent place to work. the staff is extremely generous and for the coming when it comes to helping an intern and never will you feel that the learning environment is any different from college. the company has good amount of initiatives and programs and trainings to help you shape yourself up and align with their work environment and technologies

Academic courses relevant to the project: The elevance lies a lot with the networking and computer science department

Name: Jose Kurian John (2016H1240057P)

Student Write-up

Short Summary of work done during PS-II: Change Based Testing (CBT) aims to select impacted test scenarios for testing based on the commit changes that are going in a release. This way, testing could be prioritized for the relevant test cases to find out the collaterals quick full stack development providing a Development structure for CBT.

Tools used (Development tools - H/w, S/w): Shell,Python,Eclipse, Jupyter, Pycharm, vim, Vsphere client, Vncserver, Robo3T ,Anacondas

Objectives of the project: Change Based Testing (CBT) aims to select impacted test scenarios for testing based on the commit changes that are going in a release

Major Learning Outcomes: python, javascript, html, full stack development, django, flask, jinja, MongoDB, SQL

Brief Description of working environment, expectations from the company: Working environment is supportive of learning. Encourages individual ownership of tasks assigned and provides space for creative thinking

Academic courses relevant to the project: Computer networks, Web development, Machine Learning

Name: Rishabh Pokharna (2014A7PS0108H)

Student Write-up

Short Summary of work done during PS-II: I was allotted the Thingqbator lab inside Cisco which is an innovation lab i.e. cisco employees work on their personal projects after their routine work hours. I worked on several small projects in various domains, most of which I had shown interest in. Our first project was to build a smart room control system to turn on/off light depending upon how many people are there in the lab, show temperature, etc. from a remote location. Next, we built a prototype website for Thingqbator and its upcoming centers in different universities, the website was built using Kirby(a file based system). Next, I worked on creating a chatbot using NLP and integrate it with Cisco spark. After that, we worked on Fog computing i.e. deploying IOX applications on Cisco routers. My final project was building a face recognition system on the GPU installed in the lab, to analyse the human traffic in the lab. Overall, we can choose projects of our interest if Cisco has some application of it. Please note that the thingqbator team doesn't offer PPO in general, so if you are looking for an offer, you might want to switch your team. Overall, I got to learn a lot in different technologies and I would recommend anyone from CS or ECE/EEE/ENI if they are looking for decent work in PS.

Tools used (Development tools - H/w, S/w): Personal laptop, Nvidia Tesla GPU, Raspberry Pi, ESP 32/8266, Arduino, Docker, Postman.

Objectives of the project: 1. to build a conversational chatbot using Natural language processing, which could help Cisco employees in their routine tasks. 2. To deploy Ix applications on Cisco IR8x9 routers, in order to process data coming from the end devices like LDR sensor, temperature sensor, etc. 3. to perform analytics on the human traffic in a lab/closed room, using face recognition.

Major Learning Outcomes: machine learning, fog computing, NodeJS, Python, Docker, REST API, Ix infrastructure.

Brief Description of working environment, expectations from the company: Work timings are flexible, but you need to spend at least 8-9 hours per day in the station. Since, I was in Thingqator lab, there are no expectations as such, apart from working on your own projects and helping others working in the lab. You might be asked to work along with a startup if Cisco is collaborating with them.

Academic courses relevant to the project: Machine Learning, Software development, Artificial intelligence.

Name: Mudit Pandey (2014A7PS0017H)

Student Write-up

Short Summary of work done during PS-II: The first part of the project involved building an autonomous robot for various IoT applications. The robot autonomously mapped an unknown area and was then capable of navigation through the mapped region (with obstacle avoidance). Applications such as generating a wifi heatmap, temperature heatmap etc. were coded in so that it could perform such applications while exploring an area. The second part of the project involved working with a few startups. We had to integrate their products with Cisco Edge routers. This involved developing applications on Cisco IOx and deploying them onto the routers.

Tools used (Development tools - H/w, S/w): Hardware: Cisco IR800 Series routers, Cisco 3000 Series Switch, Cisco 5500 Series Wireless LAN controller, Cisco Meraki routers, Kobuki Turtlebot, Nvidia Jetson TX2, ESP32/ESP8266 Software: Docker, Cisco Kinetic Programming Languages used: C++, Python, JavaScript, Ruby.

Objectives of the project: (i) Design an autonomous robot for IoT applications (ii) Deploying Cisco IOx apps on edge devices for fog computing.

Major Learning Outcomes: (I) Learnt about SLAM, frontier exploration and how to build an autonomous robot. (II) Learnt in detail about cloud and fog computing. (III) Learnt in detail about various networking concepts. (IV) Learnt about blockchain. (V) Worked with a variety of software.

Brief Description of working environment, expectations from the company: The work environment is great. We have flexible office times and there isn't any rigid dress code. There are a variety of food options inside the campus where you get all kinds of food - North Indian, South Indian, Chinese, Continental, Sandwiches, Salads etc. These meals however are not free but can be purchased at reasonable rates. Technically, there are no day offs for interns but one may take a leave based on their manager's discretion.

Name: Saurabh Singh Parmar (2016H1030019G)

Student Write-up

Short Summary of work done during PS-II: Cloud computing has become prominent for today's businesses due to major advantages in on-demand services, resource-pooling, reliability and pay per use basis. These cloud models are beneficial for new startups and enterprises as they neither have to pay for infrastructure or installation, nor do they require man power for its maintenance. But to avail these services, cloud providers have to face many challenges with high availability being a major concern. Our main aim was to achieve that in the cloud environment. Along with that, our team is working on a B2BUA product.

Tools used (Development tools - H/w, S/w): JSON, Google Protobuf, RabbitMQ, ZeroMQ, Wireshark, advanced C++ 11, Redis No-sql database , Kafka messaging Protocol.

Objectives of the project: High availability framework for real time stateful cloud applications.

Major Learning Outcomes: Obtaining sense of designing and implementing a project from scratch and how it fits in the real world domain of larger things .In addition to that Agile model understanding and how corporate runs .

Brief Description of working environment, expectations from the company: Cisco has a great work environment. It really gives the flexibility and comfort to learn and work in a collaborative way. We get help from managers and mentors alike and ample guidance. Plus there's good food and team outings.

The office has games for leisure. They take care of their employees and interns a lot. They gave us MAC book PRO i.e. too cool.

Academic courses relevant to the project: Computer Networks, C++, Cloud computing.

Name: Roshan Jayswal (2016H1240056P)

Student Write-up

Short Summary of work done during PS-II: Project Part-I: Performance Improvement of PPPoE Client Emulation on ASR1000 Router Performance of the sessions bring up is measured by the term called CPS. Currently PPPOE emulation is not be able to achieve higher CPS which limits the sessions scale on ASR1000 to higher numbers with the customer specific CPS requirements. In this project, an attempt is made to fine tune the PPPoE emulation module which can help in generating PPPoE control packets at the much faster rate which can eventually improve the CPS number. Project Part-II: Hosting TRex as a Container on ISR4k Router for PPP Sessions. We have a PPPOE client emulator module on ISR4k router which can be used to bring up the PPPOE sessions. Though, we can use this for scaling the PPPOE sessions, there is a limitation, that we cannot send any traffic over these PPPOE sessions, since it requires PPP encapsulated packet. If TRex (as container) is capable of generating PPP encapsulated packets then we can use it for sending traffic over these sessions. So, the aim of this project is to run the realistic Traffic Generator as a container over ISR4k router which can be used to send the PPP sessions traffic, thus acting as a virtual Traffic Generator instead of relying on third party expensive traffic generators like Spirent & Ixia, as being used by Cisco for generating Traffic over router.

Tools used (Development tools - H/w, S/w): ASR1k router, ISR4k router, Spirent, TRex GUI, Python.

Objectives of the project: To improve CPS of ASR1k PPPoE client emulation & to Host TRex as a Container on ISR4k to send PPP Traffic.

Major Learning Outcomes: IOS XE concepts, Docker, LXC, KVM containers application, PPPoE call flow

Brief Description of working environment, expectations from the company: Good working environment with major scope of learning networking concepts.

Academic courses relevant to the project: Computer Networks, OS.

Name: Bhavna Rana (2016H1120171P)

Student Write-up

Short Summary of work done during PS-II: Power over Ethernet or PoE describes system which provide electric power along with data connection on Ethernet cabling. This enables Ethernet to give both data and electric power connection to devices such as IP cameras, and VoIP phones, LED lighting etc connected to switch. As of now the PoE mechanism allows for only one powered device to draw power from a single PSE port. The motive is to enable multiple powered devices to be connected to single power source equipment port.

Tools used (Development tools - H/w, S/w): Catalyst 3560cx series switches, PoE Belvedere switch, Opengrok, putty, Wireshark.

Objectives of the project: To be able to connect multiple PDs to single PSE port and carry out power negotiation.

Major Learning Outcomes: Layer 2, layer 3, LLDP, CDP, c3560cx series switches, Power over Ethernet.

Brief Description of working environment, expectations from the company: Hands on c3560cx switches, debugged the code, intercepted the LLDP/CDP packets, extending the existing PoE code, working on proof of concept for the project. The company provided proper guidance and working environment resources. Manager and mentors were easily approachable and helpful. The internship period was properly laid out with objectives and presentations including demos and team meetings.

Academic courses relevant to the project: Computer network (OSI layer model, Layer 2, Layer 3), C programming.

Name: Vivek Nimbarmunde (2016H1120166P)

Student Write-up

Short Summary of work done during PS-II: Worked on developing multi-device manager where a networking device (like switch, router or eWLC) will act a manager which will manage multiple devices in the network. The manager device will be able to monitor, configure and generate audit reports for managed devices.

Tools used (Development tools - H/w, S/w): Technologies Used - AngularJS, Lua, Unix.

Objectives of the project: The problem that SMB (small and mid-size business) customers face is that in maintaining multiple devices in the network where they are required to log into individual devices to monitor or configure them. The options available are either too costly or not suitable for large number of devices. So, from business point of view, this project will help the SMB customers to manage and configure multiple device from a single device which will be the manager. Currently, user can add devices, have an overview of health of managed devices, generate audit reports, create template to take necessary action on a managed device.

Major Learning Outcomes: The daily discussion with mentor was very helpful in getting efficient solutions to problem at hand . Weekly discussions with manager helped to look at the importance of project from business point of view and focusing on features that will be important to the customers and improving overall usability of the system.

Brief Description of working environment, expectations from the company: Work timings are very flexible. It is expected that interns will be proactive and approach their mentors. There were weekly meetings with manager and mentor to know about the progress of the project. Other team members were also helpful while setting up the project and it was a great experience collaborating with them.

Academic courses relevant to the project: Computer Networks, Cryptography.

Name: Shubham Bansal (2016H1120157P)

Student Write-up

Short Summary of work done during PS-II: Objective of the project is to generate unit test cases for CISCO projects. Scope of the project includes various tasks such as writing parser for java code, implementing static analysis capabilities, mocking implementation. Goal of the project is to develop an in-house tool for developers. Automating the process of test case generation is challenging and it requires lot of research in the area. So overall whole project is both research and development experience. This tool will help in improving the code coverage for CISCO products. A good implementation can help developers and testers to efficiency and productivity in their work.

Tools used (Development tools - H/w, S/w): Eclipse IDE, JUnit and Mockito framework

Objectives of the project: Objective of the project is to generate unit test cases for CISCO projects. Scope of the project includes various tasks such as writing parser for java code, implementing static analysis capabilities, mocking implementation.

Major Learning Outcomes: Unit Testing, Frameworks such as JUnit and Mockito.

Brief Description of working environment, expectations from the company: The work environment is very friendly professional and personal life is balanced here. Cisco provides time to learn new things.

Academic courses relevant to the project: Software Architecture, Software Testing.

Name: Manish Gaurav (2015H3130071H)

Student Write-up

Short Summary of work done during PS-II: Enhanced maintainability and add functionality to existing web portals.

Tools used (Development tools - H/w, S/w): JavaScript, Python, PHP.

Objectives of the project: To capture, input, update, and maintain knowledge based intellectual capital over time using existing tools and develop future tools.

Major Learning Outcomes: Learned Full Stack Web development.

Brief Description of working environment, expectations from the company: Encouraging and good work life balance.

Academic courses relevant to the project: Study in Advanced topics.

Name: Sajal Pandey (2016H1240030H)

Student Write-up

Short Summary of work done during PS-II: The project aims at implementing or enhancing the CLI (command-line interface) to show inconsistencies at different software modules of various features in

the system. Added support of Vethernet² (virtual Ethernet) and VP grouping in parallel to the existing Ethernet² interfaces in the CLIs wherever required.

Tools used (Development tools - H/w, S/w): Python, Vnc viewer, FI switch commands, Nxe hardware commands.

Objectives of the project: To build consistency checker and features for latest UCS FI switch.

Major Learning Outcomes: Working knowledge of UCS system architecture.

Brief Description of working environment, expectations from the company: Encouraging to learn to new technology. Easy Resource access. Friendly mentor and team members.

Academic courses relevant to the project: Computer networks.

Name: Ayush Goel (2016H1030036H)

Student Write-up

Short Summary of work done during PS-II: Created an automated tool to extract intelligent information from logs for quality improvement.

Tools used (Development tools - H/w, S/w): Python, MySQL, Regular Expression.

Objectives of the project: Using the logs to achieve more than just failure analysis.

Major Learning Outcomes: Python, Regular Expression.

Brief Description of working environment, expectations from the company: Encouraging and good work-life balance.

Academic courses relevant to the project: Python Programming.

Name: Rahul Shrotey (2016H1240060P)

Student Write-up

Short Summary of work done during PS-II: BU - Enterprise Networking , Team focus - Industrial IoT. Cross compiling SNORT - IDS for ARMv8 processors. Later compiled the same cross compiled version on Petra box of CISCO.

Tools used (Development tools - H/w, S/w): Virtual Box, Linux, CISCO's switch (Petra).

Objectives of the project: To run SNORT on ARMv8.

Major Learning Outcomes: Open source compilation, RISC and CISCO processors.

Brief Description of working environment, expectations from the company: Sincerity and honesty are must according to me. Working environment is very good, people are co-operative and helpful.

Name: Prakash Dwivedi (2016H1240065P)

Student Write-up

Short Summary of work done during PS-II: I worked on L2/L3 of Network. Project was the part of Software define networks as we known SDN having three plane Management, Control and Data plane. we can program Management , and control plane of n/w but for Data plane we depends on ASIC languages.we Programmed this ASIC devices(routers ,switches) by P4 (programming protocol independent packet processor). Its also helps in analyzing networks.

Tools used (Development tools - H/w, S/w): P4 programming language, C,python and JSON .

Objectives of the project: Make network completely programmable.

Major Learning Outcomes: I learned one new language P4, and get good understanding of layer 2 and layer 3 devices and protocol.

Brief Description of working environment, expectations from the company: Cisco is one of the best company in terms of work environment.

Academic courses relevant to the project: As i mentioned it is the part of Software define networking.

PS-II Station: Dell R&D, Bangalore

Student

Name: K S Sumish (2016H1400036G)

Student Write-up

Short Summary of work done during PS-II: Worked for the design of a network performance tool in the pre-boot environment. Many designs of the first generation BIOS cannot meet the needs of today. UEFI which is the next generation of BIOS has fewer limitations when compared to legacy BIOS. In case of OS failure we need a recovery USB/DVD disk but if it is not available we have a network boot option here. Pre-boot Execution Environment (PXE) defines a method for booting computers using a network interface. There are many tools to measure network performance in OS environment. My project deals with designing such tool in the pre-boot environment to measure the network performance over such interface. The project required C, sockets and firmware programming skills.

Tools used (Development tools - H/w, S/w): EDK2, C.

Objectives of the project: Design a UEFI based Network performance utility on TCP/IP and UDP streams with varying packet sizes both for Wired and Wireless network stack.

Major Learning Outcomes: Design a UEFI based Network performance utility on TCP/IP and UDP streams with varying packet sizes both for Wired and Wireless network stack.

Brief Description of working environment, expectations from the company: Working environment at Dell was very good and people working there were very friendly. I got to learn about their huge array of products, explored a lot of new technologies. Not much scope for those looking for hardware profiles.

Name: Aakash Sahu (2016H1120174P)

Student Write-up

Short Summary of work done during PS-II: Dell Command | Monitor doesn't have a GUI to list the current BIOS configuration and alerts. The major requirement is to develop a UWP GUI to configure and retrieve BIOS settings. The application need to use BIOS Direct WMI Interface as BIOS Source.

Tools used (Development tools - H/w, S/w): Visual Studio 2015, WMI Explorer.

Objectives of the project: UWP application to provide GUI using BIOS Direct WMI service as a back-end. Use of a secure channel to communicate with the BIOS Direct WMI.

Major Learning Outcomes: - Knowledge of a UWP application development with the C++/CX and .NET. - Knowledge of Microsoft's Remote Procedure Calls. - Working in an agile environment. - Team management and communication.

Brief Description of working environment, expectations from the company: Dell's working environment is really joyful and full of enthusiastic people. They celebrate every individual success and keep you motivated. The expectation from the company was to analyze the problem and provide them an efficient way to solve it.

Academic courses relevant to the project: Software Engineering Management, Software Architecture, OOAD.

PS-II Station: EMC, Bangalore

Student

Name: HIMANSHU ARORA (2013B2A80741G)

Student Write-up

Short Summary of work done during PS-II: I have been interning here for two semesters now. Work is software development of NMM modules. NMM is software backup restore software of EMC.

Tools used (Development tools - H/w, S/w): C++.

Objectives of the project: Made me industry ready.

Major Learning Outcomes: Made me industry ready.

Brief Description of working environment, expectations from the company: Team is really nice. Work hours are not stretched. One may study side by side if he wants.

Academic courses relevant to the project: DSA, OOP, DBMS.

PS-II Station: Ericsson Global India Pvt. Ltd., Bangalore

Student

Name: Aditya Jha (2013B3A30460G)

Student Write-up

Short Summary of work done during PS-II: Worked on a tool used for analyzing packet capture files during session establishment for any call. Understood SIP and was introduced to Ruby and Wireshark.

Tools used (Development tools - H/w, S/w): Wireshark, ruby.

Objectives of the project: To modify the tool.

Major Learning Outcomes: Ruby, Session Initiation Protocol.

Brief Description of working environment, expectations from the company: Very helpful and knowledgeable people. Productive and balanced work environment.

Name: Likhitha B (2013B4AA0855H)

Student Write-up

Short Summary of work done during PS-II: I worked on SIP protocol and some test cases related to it.

Tools used (Development tools - H/w, S/w): Git, ttcn, Unix.

Objectives of the project: To reduce dependencies between Managed items, to add tags to privacy data and to resolve errors in test cases.

Major Learning Outcomes: I learnt how to work with Git, gained knowledge on communication protocols.

Brief Description of working environment, expectations from the company: Work culture is very good. Deadlines are relaxed. One can get to learn about Communication protocols. You can experience the work culture here by attending daily meetings.

Academic courses relevant to the project: Communication networks.

PS-II Station: Flipkart Analytics, Bangalore

Student

Name: Devesh Gobar (2014ABPS0851P)

Student Write-up

Short Summary of work done during PS-II: I worked on various business analytics projects under Planning analytics team, like the migration and automation of the whole planning process, improving reservations forecast for the warehouses and various other ad hoc tasks which included beginner level automation. The problem statements have a business objective which you need to solve through any of the tools and models you are aware of.

Tools used (Development tools - H/w, S/w): Python, R, SQL.

Objectives of the project: 1) Planning automation (which is currently done manually) 2) Improving warehouse reservations forecast.

Major Learning Outcomes: You learn a lot of business aspects and stakeholders management. You will also understand the core aspects of functioning of ecommerce in India. The problem statements are business driven completely so to even understand them you need a fair understanding of the business. You will also use a lot of R/Python (whichever you are comfortable with) and SQL for data extraction.

Brief Description of working environment, expectations from the company: The working environment is really nice as it still has a startup atmosphere so there are no working hours, no fixed amount of leaves. The only thing they care about is that your deliverables come on the deadlines or before it and

you can even work from home (which is not advisable as office is quite fun). You can expect a very warm working environment and everyone is very friendly and approachable too. You can approach your seniors for guidance or any advice easily. I loved the working environment personally. You can expect a PPO too if you work sincerely. They give weightage to the kind of sincerity and efforts you put into the projects.

Name: Eshan Tyagi (2014A8PS0445P)

Student Write-up

Short Summary of work done during PS-II: The Work mainly involved, initially building a model based on the data set and later training and optimizing it. The data had to be analyzed and the insights that came out of the analysis had to reported to management teams.

Tools used (Development tools - H/w, S/w): QlikView, R, SQL.

Objectives of the project: The objective of the project as to increase the Units per Order at the Flipkart Level.

Major Learning Outcomes: Building Predictive Models, Optimization of Queries and Observing data and getting insights from it.

Brief Description of working environment, expectations from the company: The Work Environment is satisfactory, all the employees are helping, there are flexibility of working hours and good food is available. The employees are expected to enjoy more benefits.

Academic courses relevant to the project: Machine Learning, Data Base Management System.

PS-II Station: Flipkart Internet Services Pvt. Ltd, Bangalore

Student

Name: Anant Sharma (2014A7PS0051G)

Student Write-up

Short Summary of work done during PS-II: I created a distributed system for automated catalog creation of eBay USA products on Flipkart. I basically created a workflow to automate the process using airflow(which was setup as a cluster). My cluster interacted with other clusters like HDFS cluster for shared storage for my airflow nodes, mysql cluster to store the meta information about different states in workflow, spark cluster for distributed compute. Thus, creating a fault tolerant, scalable system.

Tools used (Development tools - H/w, S/w): Apache Airflow, Spark, Hadoop, Mysql, Redis.

Objectives of the project: To create a fault tolerant, scalable system for automated catalog creation.

Major Learning Outcomes: I got hands on experience in creating a distributed system. I learnt a lot about spark jobs, Hadoop, various system design patterns, version control. There were many code reviews which helped me to write clean, production level code.

Brief Description of working environment, expectations from the company: Work environment is really very good. They treats you like an employee and this gives you a lot of responsibility. You're responsible for your work and you need to take care of it if anything goes wrong. Since flipkart is still growing and they are still building new features you get a really good work. It's not a startup anymore but the culture is same, it's stable in terms of business but in terms of tech lot of things needs to be done, thus, lot of opportunities for you to grow.

Academic courses relevant to the project: Software development, OOP, DBMS, DSA.

Name: Cheruku Aditya (2014A7PS0186H)

Student Write-up

Short Summary of work done during PS-II: Analysing data to find trending stores for festivals, seasonal and also finding regional trends.

Tools used (Development tools - H/w, S/w): Hadoop, Pig Scripts, Oozie workflows, Java

Objectives of the project: Providing predictive recommendations like festive and seasonal recommendations.

Major Learning Outcomes: Big Data and other technologies used.

Brief Description of working environment, expectations from the company: Friendly environment. Student should be able to learn new technologies and should be able to complete the project.

Academic courses relevant to the project: Machine Learning.

Name: Soamya Agrawal (2014A7PS0185H)

Student Write-up

Short Summary of work done during PS-II: My project dealt with writing plugin that takes Aerospike backup daily. It is currently used by all the teams that use Aerospike as their datastore. My second project dealt with removing archival listings from Aerospike. To achieve this task, I had to learn all the technologies mentioned above.

Tools used (Development tools - H/w, S/w): Dropwizard, Apache Kafka, Storm, Aerospike, Guice, Hibernate.

Objectives of the project: My project dealt with writing plugin that takes Aerospike backup daily. It is currently used by all the teams that use Aerospike as their datastore. My second project dealt with removing archival listings from Aerospike.

Major Learning Outcomes: Brushed up OOPs concepts, learnt about Aerospike (a NoSql datastore) , Dropwizard, Hibernate, Apache Kafka, Storm, Guice.

Brief Description of working environment, expectations from the company: You can expect a great learning experience with everyone there to help you with your project willingly. Timings are quite flexible, and it is made sure that everyone learns properly about the technologies used in this brief period of time.

Academic courses relevant to the project: Object Oriented Programming.

Name: Abhishek Gupta (2014A7PS0026P)

Student Write-up

Short Summary of work done during PS-II: My initial work entailed working with representatives of several teams (Automation, IT, Product, Design) to evaluate the tech feasibility of a third party sortation system. It required studying and understanding the existing ekart tech ecosystem and third party sortation system. I came with a list of consolidated list of questions for the vendor which would help us gather important information to decide whether Ekart will be able to use the new system. I hosted tech discussions to come up with process design of integrating our processes of sortation and bagging with the new system. Post this, I started working on the improving the API latency of one of most critical operations - bagging. To scale up the size of bags it was necessary for the tech systems to maintain the usual SLA for smooth ground operations. I did improve the latency of the bagging API and did a Non-Functional Test using JMeter on the same. The 99th percentile of the API improved nearly by a factor of 20. Post this, I contributed in a project carried out by a full time employee. I made the UI for the project. This UI would allow the client to manage resources by allocation/deallocation to a consumer.

Tools used (Development tools - H/w, S/w): S/W - Dropwizard, IntelliJ, Hibernate, Redis, MongoDB, SEQUELPro, AngularJS H/W - MacBook Pro.

Objectives of the project: 1. Understand the existing sortation systems. 2. Find out tech feasibility of the new system. 3. Design the proces flow of the new system.

Major Learning Outcomes: 1. Familiarity with the industry practices to write code which is testable, flexible and maintainable. 2. Measure performance aspects of services using tools like JMeter.

Brief Description of working environment, expectations from the company: SCRUM methodology was used to manage projects in my team. So biweekly meetings were held to set the expectations for the upcoming 2 weeks. A daily standup is held to discuss the progress on the project. Since it is not unusual for the priorities to change within a sprint, deadlines are quite flexible. Knowledge Transfer (KT) sessions are held to help onboard new or even old employees on unfamiliar/new systems so that one can start contributing as soon as possible. In the beginning of each quarter, meetings are held frequently to discuss the projects which are being taken up and project owners are assigned. Each project owner will understand the project requirements and come up with small manageable tasks with their expected effort (in weeks) on the basis of which sprints are usually planned. The work done by the team required 24x7 support for which we have dedicated oncall team. To further support that oncall team, developers take turns to provide additional support. The oncall-developer has to be available 24x7 for production issues. The team manager also keeps a weekly one-to-one session with each employee separately (on top of everyday standup sessions) so that proper feedback/grievance addressal can take place. Most of the projects usually involve multiple teams so one has to be involved in a lot of meetings and discussions.

Academic courses relevant to the project: OOP, Database Systems.

Name: Hardik Gupta (2013B3A30435P)

Student Write-up

Short Summary of work done during PS-II: I created a library that will save live data from millions of users and then use that data as test cases for regressive testing. I worked on static analyser part for easy onboarding of user services with the library. Implemented maven plugins for code coverage.

Tools used (Development tools - H/w, S/w): jenkins, sonarqube.

Objectives of the project: Regressive testing automation library using live data from users.

Major Learning Outcomes: Java in-depth understanding native level, jenkins, sonar, networking.

Brief Description of working environment, expectations from the company: Team is quite workaholic , everyone has in-depth knowledge . Daily update session is there to check on progress and bi-monthly sessions are these for sprint planning.

Academic courses relevant to the project: Object oriented programming, data structures, operating systems.

Name: Sanjeev S (2013B4A70495G)

Student Write-up

Short Summary of work done during PS-II: My project was to build a performance benchmarking framework for use at Flipkart. It would first setup the instances needed to generate the load, generate the required load at the given endpoint by running all the tools that match the specs, and finally aggregate the results. It would be used for benchmarking different services of Flipkart.

Tools used (Development tools - H/w, S/w): Golang, Various load testing tools(ab, wrk, vegeta, locust).

Objectives of the project: Benchmarking framework for Flipkart.

Major Learning Outcomes: Golang, Performance Testing, Software Design.

Brief Description of working environment, expectations from the company: We got a 15 inch Mac for work. There was more than sufficient capacity in Flipkart to create as many instances (vms) as needed. They needed to have the project in production by the end of the internship.

Name: Priyanka Patel (2014A7PS0016G)

Student Write-up

Short Summary of work done during PS-II: My project involved cross template attribute mapping. These templates contained several columns pertaining to product attributes that needed to be filled by any seller that wanted to sell products on Flipkart. The aim of my project was to automate template generation of one kind from another already filled template.

Tools used (Development tools - H/w, S/w): Java, MySQL.

Objectives of the project: Enhance seller experience by making them fill only one kind of template and also reducing human error because of automatic generation of template.

Major Learning Outcomes: I learned how to write production level code and also learned what all points are concentrated upon to enhance user experience.

Brief Description of working environment, expectations from the company: The working environment is quite comfortable and pleasant; the teams are quite friendly and try to help in whatever way possible.

Academic courses relevant to the project: Object oriented programming.

Name: Shavak Agrawal (2014A7PS0076P)

Student Write-up

Short Summary of work done during PS-II: My major work was around building an anomaly framework to handle different types of signal generated by various systems within Flipkart to detect issues in the system in a pro-active manner. This framework needs to be able to handle various system and business signals and point out anomalies in the best way possible.

Tools used (Development tools - H/w, S/w): Python, R, Elasticsearch, SQL

Objectives of the project: Anomaly Framework.

Major Learning Outcomes: Explored various unsupervised anomaly techniques in theory and in practice.

Brief Description of working environment, expectations from the company: The working environment is highly employee friendly and interns are treated as a normal part of the team and are given tasks which are actually required and not tasks which will never see the light of day. They are also accommodating of a request to work in a specific domain if the team has work in that particular domain.

Academic courses relevant to the project: Machine Learning, Database Systems.

Name: B Siva Naga Sasank (2014A7PS0050H)

Student Write-up

Short Summary of work done during PS-II: I was part of the FinTech team of Flipkart. The team has created a product known as Flipkart Pay Later and a service by the name 'Collections' is a part of it.

The service sends timely reminders to pay back their outstanding amount through SMS,Email,Push Notifications. Currently, these communications are send at a fixed time in a month. The project was to capture customer callbacks to these communications - like time of delivered, open etc. and find out for any trends and accordingly design a solution that would send out these communications based on customer behavior - like based on his/her time preference and channel preference.

Tools used (Development tools - H/w, S/w): IntelliJ, Maven, Grafana, Postman, Git

Objectives of the project: Objective of the project is to determine any user trends, patterns in the data and accordingly customize the experience of the service for every user.

Major Learning Outcomes: Data Analysis, Data visualization, HBase, Object Oriented Concepts, Kafka, REST APIs, Writing production level code.

Brief Description of working environment, expectations from the company: Work environment is very good and you can get help from anyone. Everyone is friendly. Good problem solving skills is what expected. Should be willing to learn new technologies and concepts as and when required.

Academic courses relevant to the project: Data Mining, Object Oriented Programming, Data Base Systems.

Name: A Sai Aditya (2014A7PS0052H)

Student Write-up

Short Summary of work done during PS-II: My project involves developing components for the Journey platform used at Flipkart. Journey is a state chart orchestrator platform which allows the teams here to implement many business logic components using state charts. I was given the tasks of developing a HTTP Event Ingestion layer, Event Audit Store layer, and part of a Client application for Event Ingestion.

Tools used (Development tools - H/w, S/w): Java, Dropwizard, Kafka, HBase, JMeter, Jenkins

Objectives of the project: To develop components for the Journey platform at Flipkart - the HTTP ingestio layer enables incoming events to be processed, the audit store enables easy and fast auditing of these events.

Major Learning Outcomes: Good software engineering and design principles, Knowledge of new programming constructs, how to package and deploy applications, how to work with version control systems - Git and GitHub.

Brief Description of working environment, expectations from the company: Flipkart is an organisation where people are quite dedicated and passionate about their work. There is a lot of development work going on for implementing new features and improving the existing ones, and it can get a little hectic sometimes. But, it was a great, fun-filled and learning filled experience. Interns are given good projects and work alongside the full time employees, learning as they progress through their projects. The work culture is quite casual, and not far away from that of a new startup. The main expectations from the organization is that the interns can contribute to the organization while learning from their work and peers.

Academic courses relevant to the project: Object Oriented Programming Concepts, Database Systems, Software Engineering.

PS-II Station: Goodera (NextGen PMS) - IT, Bangalore

Student

Name: Pawan Saran (2013B5A30451P)

Student Write-up

Short Summary of work done during PS-II: I was assigned to the Dashboarding Team in Goodera. The team is responsible for building dashboards which display the CSR Data of Companies in a meaningful way. These Dashboards are used by CSR Heads and Stakeholders in the company to monitor the work and efficiency of CSR projects. The work was very basic front-end web design using HTML, CSS and Javascript. After a few days of learning the basics, I was assigned a dashboard. From then on the work was same throughout the remaining part of the internship. Work was repetitive and learning was minimal.

Tools used (Development tools - H/w, S/w): HTML, CSS, Javascript, JQuery

Objectives of the project: Designing Dashboards which display the CSR Project Data of Companies

Major Learning Outcomes: Learnt the basics of Frontend Web Design

Brief Description of working environment, expectations from the company: In the Dashboarding Team to which all the interns were assigned, the work is repetitive and monotonous. They don't use any frameworks for designing the frontend. HTML, CSS and Javascript is used. There is a possibility of shifting to React-JS. We were told at the start that they are building a React-JS framework which would be ready soon and we would get a chance to use that, but it didn't happen till the end of our internship. In the dashboarding team, the work pressure is high as it is understaffed. There is no streamlining of work flow which comes to the team. Mismanagement on the part of other teams leads to a lot of inefficiency and wastage of resources and time. We gave our feedback regarding this many times but no changes took place. Dashboarding team is highly dependent on interns. So a lot of responsibility and work is handed to the interns. Work ethic in the company is not strong. People have to sometimes work on the

weekends/early morning/late night. Last minute changes and issues are a norm, which leads to odd time calls from managers.

Academic courses relevant to the project: Computer Programming, Data Structures and Algorithms.

Name: Akshay Kumar (2014A8PS0493G)

Student Write-up

Short Summary of work done during PS-II: I have made multiple dashboards for different clients in Next-Gen PMS (Goodera). We use JavaScript, HTML, CSS for the dashboard. Minimal knowledge of these technologies is sufficient to take on the work here. The best thing is the team here helps a lot in picking up the work. Also I have some extra work of writing some python scripts for uploading data in the system.

Tools used (Development tools - H/w, S/w): JavaScript, HTML, CSS, StrongLoop queries

Objectives of the project: Making Dashboards

Major Learning Outcomes: JavaScript and some exposure to web development

Brief Description of working environment, expectations from the company: People in dashboarding team are nice which help to bear the pressure and requirements of the company. Requirements from consulting side are never fixed hence needs to be improved.

Academic courses relevant to the project: Bhagwad Gita

Name: Aasish Rampalli (2014A7PS0021P)

Student Write-up

Short Summary of work done during PS-II: The work Goodera does is digital handling of companies CSR data like spending, impact etc. to help them better analyze the way their work is getting done and the impact they are making. The way they represent this data is in the form of Dashboards(websites) and that and that alone is the work of us technical team interns. After due consultation with client the consulting team shares the design and core logic of the dashboard they need us to make for the client.

Now our work is to make these websites and send it to consulting team for review after which they will be shared to the client after making any necessary changes.

Tools used (Development tools - H/w, S/w): HTML, CSS, Java Script

Objectives of the project: Making CSR websites for companies

Major Learning Outcomes: Front-end web development

Brief Description of working environment, expectations from the company: Firstly there is no diversity of work here. For your whole internship you will get to learn nothing apart from a little bit of front end web development. Leaving that aside, the environment here is not conducive for working because of one main reason, no proper workflow followed. The design, logic etc. for the dashboard would not be finalized before we are shared the requirement and hence a slew of changes keep coming to us. We spend more time changing dashboards than making them. This type of work environment on top of the repetitive work creates a lot of frustration. Rather than teaching and grooming interns they make you work like regular employees to the bone. Repetitive work with no learning, lack of proper procedure etc. add up to make a very bad experience of working here.

Academic courses relevant to the project: C (Minimal knowledge of programming is enough)

Name: Mohammad Sheraj (2013B5A80554P)

Student Write-up

Short Summary of work done during PS-II: At the dashboarding team at Goodera, we create the front end of the dashboards which display the data of the CSR (Corporate Social Responsibility) activities done by the corporation using bar graphs, pie charts, donut charts, line charts, funnels, modals, carousels and cards. We use the C3-charts library to make bar graphs, pie charts, donut charts, line charts, clickable funnel charts and combination charts. For the heatmap, we use Google chart library and for the maps, we use mapbox, JSMaps and Google charts. For the buttons and cards, we use the bootstrap library and for the icons we use the font-awesome library. For all the calculations we use the data entered via the p3 app developed by Goodera and use the Strongloop API Explorer to get the data using AJAX calls. After we get the data, we compute the required values using JavaScript. The data is fetched asynchronously using promise objects. I have also worked on python scripting where after removing the protection and

reading the excel files, I dynamically fill the project hierarchy and profile Instances using user upload. All the work is done and collaborated using git.

Tools used (Development tools - H/w, S/w): HTML, CSS, Bootstrap, Javascript, JQuery, C3 Charts, Google Charts, Python

Objectives of the project: Building Digital Dashboards

Major Learning Outcomes: Frontend Development, Python Scripting

Brief Description of working environment, expectations from the company: The company is located at JP Nagar 3rd phase in Bangalore. Due to its presence in Bangalore the climate is very pleasant and expect moderate temperatures for the entire duration of the PS-2 programme. The office is air conditioned and looks quite neat. We got Core i7 company laptops with 16 GB ram to work on, though at around the end of the programme. The stipend we got was 51k which was good. Outings were also organised like a team lunch and a townhall at Eagleton resort. A hackathon was also conducted in which all the engineers participated. As for the work, we were busy making dashboards and more projects come as soon as you complete one project. We worked as practically employees and that came with all the responsibilities and deadlines. But we do get many thanks and praises if we did our job well. The company gave away quite a few job offers to deserving interns too which is good if you are looking for a PPO from here.

Academic courses relevant to the project: Computer Programming, Data Structures and Algorithms

Name: Rishabh Sharma (2014A8PS0434P)

Student Write-up

Short Summary of work done during PS-II: Various dashboards were created for clients such as GSK, SBI, Dell, RB etc. for them to monitor and evaluate their CSR projects. The development included mostly frontend Web Dev, and basics of Node, Mongo, Redis, MySQL.

Tools used (Development tools - H/w, S/w): Frontend - HTML, Javascript, CSS, Bootstrap, Backend - Node, Mongo, Redis, MySQL. Libraries - MapBox, C3JS Charts, Google Visualization Library. Business Intelligence - GIT, Bitbucket

Objectives of the project: Creating new web pages based on set guidelines.

Major Learning Outcomes: Full Stack Web Development

Brief Description of working environment, expectations from the company: It's a BITSian environment, everyone is responsible yet casual in terms lenency. You'll be treated as responsible professionals here, people will be concerned with how well you do your job rather than how many hours you sit at your desk. At the same time, there will be pressure and you'll have to work as much as an employee or on some days even more here.

Academic courses relevant to the project: Computer Programming (Basic Programming Knowledge)

PS-II Station: Here Maps - Data Structures, Mumbai

Student

Name: Ankit Jayaswal (2013B1A30878G)

Student Write-up

Short Summary of work done during PS-II: Support and Optimization of a Product Validation Framework

Tools used (Development tools - H/w, S/w): Software- Java (Drools Project), XML, Hadoop, Python(Web Scrapping)

Objectives of the project: Provide support and optimize the Product Validation Framework

Major Learning Outcomes: Creating Drool projects (used for rules validation), Web Scrapping through python

Brief Description of working environment, expectations from the company: Decent Work Environment, People very friendly and helpful. It depends on the project/team you are allotted but in general a great learning experience with medium workload.

Academic courses relevant to the project: Object Oriented Programming.

PS-II Station: Here Maps - Distributed Data, Mumbai

Student

Name: Siddarth Sreeni (2014A3PS0250G)

Student Write-up

Short Summary of work done during PS-II: Overall benefits to company improved, Optimization and legacy code migrations. Classifying existing places data

Tools used (Development tools - H/w, S/w): Java, Scala, Python, Dockers, Clustering tools, Algorithms, Databases, Apache Ignite, Kubernetes, Company IPs, Software's etc. Machine Learning, DBMS

Objectives of the project: Dockerizing Batch Validations. Migration to Aurora PGSQL: Oracle DBA to PostGreSQL. PointAddress Classification: Classify existing places data using deterministic methods/Machine learning.

Major Learning Outcomes: Cache based DBA, Working of Maps, Company understanding and ambitions.

Brief Description of working environment, expectations from the company: No dress code, 6 - 8 work hours and no restrictions on when to come to office or leave from office. Napping room, Play areas including PS4, TT, Caroms and mostly competitions are organized every now and then. Good work is being done in regard to R&D in core maps team. Work wise, No one really knows anything in and around the company or what kind of data is available within the company.

PS-II Station: Holiday IQ- Tech, Bangalore

Student

Name: Ankit Jayaswal (2013B1A30878G)

Student Write-up

Short Summary of work done during PS-II: Being a member of Leads Delivery Team and my task is to analyze raw data using Microsoft Excel & SQL. The insights obtained from the same is used by me in formulating & optimizing the campaigns, for the company and its major client, using Digital Marketing such as Facebook Business Manager, Search Engine Marketing, & Email Marketing.

Tools used (Development tools - H/w, S/w): Microsoft Excel, Facebook Business Manager, Oracle Responsys, Google AdWords, Google Analytics, SQL, Microsoft Power Point

Objectives of the project: The objective of the project is to analyze & formulate business strategies using Digital Marketing.

Major Learning Outcomes: Learned analysis of data using pivot tables and charts(Microsoft Excel). Digital Marketing such as Facebook Business Manager, Search Engine Marketing, & Email Marketing.

Brief Description of working environment, expectations from the company: The working environment is good. The company only wants that the work given is to be completed on time.

Academic courses relevant to the project: Marketing, Digital Marketing, Marketing Models, Analytics

PS-II Station: Hortonworks, Bangalore

Student

Name: PRASANTH YADLA (2013B5A70561H)

Student Write-up

Short Summary of work done during PS-II: I have built a distributed random data generator (job) which produces random data of different types following a particular configuration. The data generated is used for validation of the profiler jobs running on Hortonworks Data Steward Studio. Apart from this project, I have also worked on building a deep learning model that eliminates the need for mining sensitive data through brute force (regular expressions) across various clusters in a data lake.

Tools used (Development tools - H/w, S/w): Apache Spark, Hive, HDFS, Tensorflow, Python, Numpy, Apache Ambari, Ranger, Atlas, 5 node cluster.

Objectives of the project: Build a data generation framework following a specified configuration.

Major Learning Outcomes: I have learnt various major Big Data Technologies and the HDP stack of Hortonworks. I have also learnt real world applications and performance impact of Distributed Computing.

Brief Description of working environment, expectations from the company: There is a good work life balance maintained in the company. Also, the projects here are very academic oriented and interesting. People are friendly and are willing to help you out technically.

Academic courses relevant to the project: Distributed Computing, Big Data.

Name: Rahul c s (2016H1030040H)

Student Write-up

Short Summary of work done during PS-II: Test case categorization and ranking: collecting data from Hortonworks QE Dashboard and categorizing them according to test case like flakiness, product bug, QE bug etc. Used a basic machine learning algorithm to cluster the data. HortonWorks Chaos Monkey: The service perform a set of operations which exercise the functionality of Ambari product in a repeatable

manner, with the ability to periodically monitor and track the behavior of the product. The service would also let us test the resiliency and recoverability of Ambari, as it would simulate failures of Ambari agents, hosts and services within a cluster.

Tools used (Development tools - H/w, S/w): Ambari, SciKit, selenium

Objectives of the project: Predicting the value of a test case. Test the resilience of ambari

Major Learning Outcomes: Learnt about Testing frameworks.

Brief Description of working environment, expectations from the company: Flexible work environment. Testing interns will have less challenging work. Company expects you to find some bugs.

Academic courses relevant to the project: JAVA

Name: Sachin H G (2016H1030034H)

Student Write-up

Short Summary of work done during PS-II: My main area of work was on Micro-services and Kubernetes. The existing services in the product had to be deployed on individual pods across a cluster. The guide was very helpful and I liked the work a lot as I got to learn new things like docker containers, micro-services, service orchestration, kubernetes among other things.

Tools used (Development tools - H/w, S/w): Docker, Kubernetes, Helm charts, Consul, Istio, Rook, NFS

Objectives of the project: Separate the services and deploy them across pods using helm charts

Major Learning Outcomes: Service orchestration, Big data, Hadoop, Helm charts, Micro-services, Distributed Systems

Brief Description of working environment, expectations from the company: The work environment was very good as I was guided by my mentor and was given a feedback on daily basis. There was enough freedom to explore new technologies and apply them in the work.

Academic courses relevant to the project: Distributed Systems, Big data, Hadoop

PS-II Station: IBM India Software Group, Bangalore

Student

Name: M. Sushmitha (2016H1120173P)

Student Write-up

Short Summary of work done during PS-II: Customer Behavior Analytics: Predict the person behavior and show recommendations using transaction history

Tools used (Development tools - H/w, S/w): Python, pandas, IBM DSX

Objectives of the project: To give personalized recommendations for the customers based on their behavior

Major Learning Outcomes: Learned many concepts of Machine Learning

Brief Description of working environment, expectations from the company: The environment is good and gives chance for invention and innovation. New ideas are appreciated and welcome.

Academic courses relevant to the project: Machine Learning and Deep Learning.

Name: Sowmith (2014A7PS0172H)

Student Write-up

Short Summary of work done during PS-II: When you have an electronic document in one format and the document is needed in a different format, you must transform the data in your document from one format to another. For this purpose we use a Translation Service to transform data in one format to other format . The translator creates temporary files during its operation. These temporary files are only stored during processing, and the length of time for which these files may exist varies from milliseconds to a few hours, depending on the amount of data and the type of translation that is performed. The translator used by IBM for this purpose is IBM Sterling B2B Integrator Map Editor. To relate one format to another for the translator, you must define a set of instructions in the Sterling B2B Integrator Map Editor. These set of rules are written using IBM proprietary programming language. For these rules comments are written manually for the business organizations to understand. The aim of the project is to read these rules and generate comments automatically which explains the rules.

Tools used (Development tools - H/w, S/w): Python (flask,pyparsing,etree)

Objectives of the project: The aim of the project is to read the code and generate comments automatically which explains the code.

Major Learning Outcomes: Coding in python. deploying code using flask application.

Academic courses relevant to the project: Compilers.

Name: Rishabh Garg (2014A7PS0065P)

Student Write-up

Short Summary of work done during PS-II: Service implementation in chatbot

Tools used (Development tools - H/w, S/w): IBM Watson, Python

Objectives of the project: Build a chatbot integration for an analytics platform

Major Learning Outcomes: Ontology based chatbots

Academic courses relevant to the project: Information retrieval

Name: Darshit Khajanchi (2014A7PS0144P)

Student Write-up

Short Summary of work done during PS-II: Analyse banking dataset and create clustering and prediction models.

Tools used (Development tools - H/w, S/w): IBM DSx, Python, pandas library

Objectives of the project: Banking customer insights

Major Learning Outcomes: Machine learning deployment skills

Academic courses relevant to the project: Machine learning, Artificial intelligence

Name: Rachit Phartiyal (2016H1030088P)

Student Write-up

Short Summary of work done during PS-II: During the internship we were provided a general USE-CASE, where a commercial bank needs to provide offers to its clients on its debit/credit cards. This is a general scenario which a common recommender system can solve. But the task at hand is not only to find out what to recommend but when to recommend. For this task finding patterns and building a complex model which learns them is required. Insights should be extracted from the dataset which defines true behavior patterns of clients. This problem requires high compute power and time and won't be of any utility if implemented naively. As an intern at IBM we need to find feasible machine learning models to complete the above-mentioned task. The approach taken is first doing an exploratory analysis of the data, which is called as Descriptive analysis. Second is to make clusters of users based on their spend patterns and train an LSTM based model on spending patterns of the customers. This makes us able to predict the interests for a particular cluster. A web based application consisting of Descriptive analysis and Predictive Modelling with IBM DSX as the backend was implemented.

Tools used (Development tools - H/w, S/w): Python, Jupyter Notebook, Pandas, IBM DSX

Objectives of the project: Proof of Concept Product

Major Learning Outcomes: Collaboration, Soft skills/Presentation, Corporate Culture

Academic courses relevant to the project: Machine learning, Advanced Data Mining, Data Mining

Name: Khushal Modi (2014A7PS0094G)

Student Write-up

Short Summary of work done during PS-II: The main aim of the project was to extract patterns from bank transaction data. Using machine learning algorithms like clustering, decision trees and using lstms, we tried to predict the next big area of spend for the cluster.

Tools used (Development tools - H/w, S/w): IBM Watson and IBM Data Science Experience platforms

Objectives of the project: To extract behavioral patterns from bank transaction data

Major Learning Outcomes: Deeper knowledge of machine learning and data science

Academic courses relevant to the project: Machine Learning, Neural Network, Probability and statistics

Name: Surbhi Dang (2013B3A70603P)

Student Write-up

Short Summary of work done during PS-II: The aim of the project is to read codes (rules) written in IBM's proprietary programming language and generate comments automatically which explains the rules.

Tools used (Development tools - H/w, S/w): Python

Objectives of the project: To automate comment generation for one of IBM's software

Major Learning Outcomes: Python, compiler composition

Academic courses relevant to the project: Compiler construction

Name: Rajat Sancheti (2013B5A30537G)

Student Write-up

Short Summary of work done during PS-II: Worked in Hybrid Cloud and IoT. Project was regarding design of smart buildings.

Tools used (Development tools - H/w, S/w): IBM Bluemix, Watson IoT, React JS, Python, Node js, Express, Java.

Objectives of the project: Design of a smart buildings product using IoT.

Major Learning Outcomes: Back end, ui development, IoT

Name: G Balasubramaniam (2014A7PS0110G)

Student Write-up

Short Summary of work done during PS-II: Had worked on a variety of projects focusing on various areas namely Natural Language Processing, Data Mining, Full Stack development. Firstly, built a small command line tool for IBM using NodeJS for performing certain business operations involving IBM's Sterling Map Integrator. Worked on Watson Analytics API and integrated it in a service. Also, I had worked in a project involving correction of erroneous output by the Automatic Speech Recognizer (ASR) for alphanumeric sequences with 2 other interns and applied for a patent in this. Lastly, I worked on customizing the Enhanced Business Agent (EBA), an upcoming chatbot engine built by IBM for a specific use case involving generation of Invoices and viewing purchase orders using natural language queries.

Tools used (Development tools - H/w, S/w): Flask, EBA (Enhanced Business Agent), React JS

Objectives of the project: a) Building a correction layer over ASR for correcting erroneously detected alphanumeric sequences. b) Configuring EBA for a specific use case involving generation of Invoices and viewing purchase orders using NL queries.

Major Learning Outcomes: Got a good exposure to the field of Natural Language Processing and also in Full Stack Development.

Brief Description of working environment, expectations from the company: You get to work on a wide range of interesting projects if you are in the right team and some of the projects are quite challenging too.

Academic courses relevant to the project: Machine Learning, Data Mining, Linguistics.

Name: Mayank Dhaka (2016H1030041H)

Student Write-up

Short Summary of work done during PS-II: Retrieve Mobile Database for neo4j from Wikipedia and trained a system to convert questions asked by user in Natural Language into corresponding cypher query, so that an engine can be built where user asks query regarding mobile and it gives more precise answer to user by retrieving information from neo4j database and again representing it to user in his/her natural language.

Tools used (Development tools - H/w, S/w): Python,neo4j,WIndow7 ,8GB RAM.

Objectives of the project: To create more precise search engine.

Major Learning Outcomes: How to scrap information from sites ,how to store it (format) and how to create database to train a model to retrieve result.

Brief Description of working environment, expectations from the company: Working Environment is very flexible ,No special Dress Code ,No special arrival/leaving timing .Company is sure to make a great progress in Cognitive field via Watson.

Academic courses relevant to the project: Machine Learning, Python.

Name: Kanika Gupta (2014A8PS0359P)

Student Write-up

Short Summary of work done during PS-II: The support team receives lot of system generated e-mails which the concerned person has to manually find and troubleshoot. The project involves creating a MongoDB database from the IBM Notes inbox and building a web application that shows the analytics of the e-mails in a dashboard. The application also has a search page where the user can put various filters and find the desired e-mail information, this will help them to resolve the issue fast.

Tools used (Development tools - H/w, S/w): Django, Django Rest Framework, Angular, MongoDB, Python.

Objectives of the project: To build a web application to analyse the e-mails received by the team.

Major Learning Outcomes: Learnt Web Application Development basics.

Academic courses relevant to the project: Database Systems.

PS-II Station: IBM Security - Fiberlink, Bangalore

Student

Name: Shubham Arora (2015H3130077H)

Student Write-up

Short Summary of work done during PS-II: My project deals with deploying and testing of EJBCA with JBOSS as Application Server. I will be upgrading both into latest available edition without affecting the present certificates or certificate authority. My work also revolves around securitization of MaaS360 platform and doing automation of various tasks such as ca renewal, creating EJBCA instance, etc.

Tools used (Development tools - H/w, S/w): Oracle SQL Developer, Eclipse, Python, Fabric Library for Python, PL/SQL.

Objectives of the project: To upgrade EJBCA to the latest community edition possible without affecting the live customer data.

Major Learning Outcomes: Learned about the SCEP Protocol and its architecture. Got the hands on experience with the PKI Infrastructure which is one of the core components of their product MaaS360.

Brief Description of working environment, expectations from the company: Working Environment is very chilled. It gives you a startup kind of a feel in a well established MNC. They are very flexible with working hours. No need to work on weekends unless you are able to finish your assigned work in the given deadline.

Academic courses relevant to the project: Network Security, Computer Networks, Cryptography, Database.

Name: DEV VASHISTH (2016H1030087P)

Student Write-up

Short Summary of work done during PS-II: MaaS360 is cloud based product developed by IBM Fiberlink and used by various companies to support Bring Your Own Devices architecture for giving them secure access to corporate data. My project is about managing Apps portal which involves handling controller, database and front-end issues.

Tools used (Development tools - H/w, S/w): S/W - JIRA, KIBANA, TOMCAT 8, SQL DEVELOPER, SWAGGER, GRADLE, GIT, INTELLIJ IDEA.

Objectives of the project: DEVELOPING FEATURES UNDER APPS PORTAL IN MAAS360.

Major Learning Outcomes: I Learned a lot about the workflows that come under apps catalog in MaaS360, got hands on developing new features.

Brief Description of working environment, expectations from the company: Work environment in very good and friendly. You can expect good exposure on latest technologies in the company.

Academic courses relevant to the project: Algorithms and data structures, Database.

Name: Nishit Garg (2016H1120152P)

Student Write-up

Short Summary of work done during PS-II: Worked on live projects of the organization. Full Stack Web Development. I was part of the Channels team, which was responsible for providing functionalities related to customer onboarding. Work included creating APIs, User Interfaces and working with database.

Tools used (Development tools - H/w, S/w): Java, Spring, JSP, Javascript, PL-SQL, git, gradle.

Objectives of the project: To enhance MaaS360 product of IBM Fiberlink.

Major Learning Outcomes: Full Stack Web Development.

Brief Description of working environment, expectations from the company: Relaxed Environment. No work pressure. No fixed timings, only work is supposed to be complete. Helpful colleagues (atleast in Channels team).

Academic courses relevant to the project: OOAD, SEM.

Name: Rhea Madaan (2016H1030074P)

Student Write-up

Short Summary of work done during PS-II: Work done in the PS Station was related to development for an IBM product MaaS360. I worked on a particular feature called the Insight Advisor which is a cognitive engine designed to make the life of an IT manager easy by providing insights related to risk, opportunity as well as information which helps an IT admin to improve productivity, follow best practices and be aware of the emerging threats. My contribution was working on the existing code as well as developing new code in order to enhance the feature.

Tools used (Development tools - H/w, S/w): Java Technologies, IntelliJ Idea IDE, oracle db and SQL developer, no-sql database, git, gradle, fabric.

Objectives of the project: Enhancing the features of the Insight Advisor.

Major Learning Outcomes: Making use of Spring MVC Framework on JAVA. Working on version controlled development with the help of GITLAB and GITHUB, Corporate tools like JIRA, KB ARTIFACTORY etc.

Brief Description of working environment, expectations from the company: Working Environment in the fiberlink division is good. The mentors/managers are really motivating and team members really helpful. You get ample opportunities to learn and apply the things you already know. The work culture is flexible and open with many activities related to fun as well as learning organized from time to time.

Academic courses relevant to the project: Courses related to OOP concepts, Database design.

Name: Jaishree Janu (2016H1120156P)

Student Write-up

Short Summary of work done during PS-II: I have worked on Java, spring MVC, SQL and jsp. I was assigned to do work on some features of Cloud Extender.

Tools used (Development tools - H/w, S/w): Eclipse, Apache Tomcat, Fortress, SQL Developer, Jira.

Objectives of the project: MaaS360: Cloud Extender. I have worked on some features of MaaS360.

Major Learning Outcomes: I have learnt java, Spring framework and jsp. Get to work on large projects. I have learnt how to work in large industrial projects. I have learnt how one change in feature impacts other scenarios in the project.

Brief Description of working environment, expectations from the company: Good learning environment, friendly, Cooperative. Get to learn about corporate life, corporate meetings, discussion with manager and mentor.

Academic courses relevant to the project: Object Oriented Programming, Database Systems.

Name: Dhiraj Gupta (2016H1030086P)

Student Write-up

Short Summary of work done during PS-II: IOS developer : my work involved designing the MaaS360 app for multitasking scenario which involved understanding of size classes and collection views in IOS sdk.

Tools used (Development tools - H/w, S/w): Objective C , IOS SDK, Xcode.

Objectives of the project: To provide split view and support multitasking.

Major Learning Outcomes: Some insights in how corporate works.

PS-II Station: IDeaS - SAS - Software Development, Pune

Student

Name: Ameya Nerlekar (2014A8PS0416G)

Student Write-up

Short Summary of work done during PS-II: Worked in the software development team on the "Shiplt" webapp (a generic webapp). The work included both, front end as well as back end web development. I got to learn a lot from the company because of it's unique feature of conducting a "boot- camp"- a moth long crash course on all the knowledge and skills required for web development.

Tools used (Development tools - H/w, S/w): Java, HTML, CSS, JavaScript (jQuery), AngularJs, BootStrap

Objectives of the project: To build the Shiplt webapp.

Major Learning Outcomes: Realizing that I could code.

Brief Description of working environment, expectations from the company: The working environment is one of the best, most chilled out and stresses free ones you'd find in our list of PS II stations. There is no pressure as far as meeting deadlines are concerned, at least for us interns (does not mean you should slack off :P). PPOs, however, are not to be expected from the company. Loved my tenure with IDeaS.

Academic courses relevant to the project: C- programming and OOP (to the best of my knowledge).

PS-II Station: IMI Mobile Data Analytics, Hyderabad

Student

Name: MOHAMMED SHOEBUDDIN HABEEB (2014A1PS0895H)

Student Write-up

Short Summary of work done during PS-II: Work was more or less around the running of campaigns of clients. Preparing reports using different tools to manage data base and extract the relevant information is key. Work is very mundane and repetitive.

Tools used (Development tools - H/w, S/w): Excel, SQL , Tablaeu , Python.

Objectives of the project: Working for the clients like Airtel , oredoo , bsnl etc.

Major Learning Outcomes: Got comfortable with data analytics and tools involved.

PS-II Station: InMobi - Global Outreach, Bangalore

Student

Name: K CHAITANYA KRISHNA REDDY (2013B4A20680H)

Student Write-up

Short Summary of work done during PS-II: I managed end to end delivery of mobile ad campaigns starting from pre-sales, building media plans, liaising with creative team and testing, campaign optimization, reporting, post-campaign analysis. Also, I did work with sales and regional account management teams to understand client requirements and support Inmobi's biggest brand clients. Simultaneously, working with supply team to identify inventory requirements and manage the requirements of premium publisher partners in Australia.

Tools used (Development tools - H/w, S/w): InMobi Tools, Excel, Powerpoint.

Objectives of the project: To Manage end to end delivery of Mobile Ad Campaigns in ANZ region.

Major Learning Outcomes: Working of Mobile Marketing Ecosystem.

Brief Description of working environment, expectations from the company: Best working culture you can find. But, Hectic work pressure.

PS-II Station: InMobi - Market, Sales, Delivery, Bangalore

Student

Name: Thekkekara Noel (2013B4A40714G)

Student Write-up

Short Summary of work done during PS-II: To deliver campaigns of different regions with the help of the affiliate platform for Inmobi. Work mainly involves going through reports speaking to teams & publishers.

Tools used (Development tools - H/w, S/w): Excel.

Objectives of the project: Maximize revenue & Profit by delivering campaigns.

Major Learning Outcomes: Effective communication.

Brief Description of working environment, expectations from the company: Inmobi has preserved its startup culture and the people are helpful. The responsibilities given are good and equivalent to an employee.

Academic courses relevant to the project: Business communication.

Name: Priyanka Tumuluri (2013B1A40448H)

Student Write-up

Short Summary of work done during PS-II: I worked as a Campaign Manager in the Brand Delivery Team, India. The role was to set up the various mobile advertising campaigns basis the requirements and targeting and to optimize them to deliver in full.

Tools used (Development tools - H/w, S/w): MS Excel, MS PowerPoint, Internal InMobi tools.

Objectives of the project: To deliver campaigns in full.

Major Learning Outcomes: Excel skills, Components in the Mobile advertising industry, coordination with multiple teams.

Brief Description of working environment, expectations from the company: The environment is very conducive. People are about 22-30 years old and extremely friendly and helpful. Mostly populated by Bitsians, so it is easier to bond.

Name: Ayush Garg (2014A4PS0179G)

Student Write-up

Short Summary of work done during PS-II: A big chunk of my work revolved around analysing the deep pockets of revenues that InMobi can gain just by opening up the flow of requests. At InMobi, you will get the work which majorly includes analysing stuff, maintaining trackers and coordinating with various other teams for work.

Tools used (Development tools - H/w, S/w): MS Excel.

Objectives of the project: Analysing the pockets of revenue.

Major Learning Outcomes: Developed Communication skills, Learned MS Excel.

Brief Description of working environment, expectations from the company: Great working environment with freedom to work the way you want. No in and out time so you can work as per your will. People/Managers here understand things and will help you if needed.

PS-II Station: JDA Software Solutions, Bangalore

Student

Name: Sanket Rathi (2014A1PS0473H)

Student Write-up

Short Summary of work done during PS-II: Learning the warehouse application; Learning junit testing; Learning and creating Rest based spring web application; Testing; Build Automation Design.

Tools used (Development tools - H/w, S/w): Jenkins; Git; Eclipse; putty; winSCP; etc.

Objectives of the project: Automate Building Process and Test the Latest release.

Major Learning Outcomes: Working of warehouse application; Testing in an organization; REST application.

Brief Description of working environment, expectations from the company: Working environment is awesome; Company expects the job to be done in the given amount of time.

Academic courses relevant to the project: OOPS (java programming).

Name: Mandeep Singh (2014A1PS0751G)

Student Write-up

Short Summary of work done during PS-II: You are given a sample history data to work on for a first few months. Then, you are given real world data for demand forecasting.

Tools used (Development tools - H/w, S/w): TOAD, SQL.

Objectives of the project: Demand Forecasting at JDA.

Major Learning Outcomes: Demand Forecast can be done from given sales history data.

Brief Description of working environment, expectations from the company: Working environment is really good and not that hectic. Timings are flexible. Colleagues are helpful. There is not much pressure. You can take your time to do the work.

Academic courses relevant to the project: Computer Programming.

PS-II Station: JDA Software Solutions, Hyderabad

Student

Name: Sriram Pavan Balaji Koppaku (2014A7PS0168H)

Student Write-up

Short Summary of work done during PS-II: Initially I was given some tasks on which I had to perform appscan. Then my project included learning on what is mutation testing, which tool is best to perform the same and to apply it the scpo code of the company.

Tools used (Development tools - H/w, S/w): Toad, appscan, eclipse, github, pitest, jumble.

Objectives of the project: To research upon mutation testing in order to test unit tests written for the code.

Major Learning Outcomes: I gained lot of confidence and learned how to work as a team. My teammates and manager helped me learn many useful technical aspects.

Brief Description of working environment, expectations from the company: People are very friendly and supportive. They help you even when you ask silly doubts. Good work culture. No special benefits like accommodation or cabs or food. Cafeteria food is fine and games like carroms and TT are available from 4. No fixed timings and super stress free work.

Academic courses relevant to the project: Object Oriented Programming.

Name: Anjali Gupta (2014D2TS0978P)

Student Write-up

Short Summary of work done during PS-II: Application of Machine Learning in Pricing and Revenue Managment and also worked on data mapping.

Tools used (Development tools - H/w, S/w): Python, Lexalytics Semantria for Excel, Toad for Oracle.

Objectives of the project: To understand the Pricing and Revenue Management and also Optimize Revenue.

Major Learning Outcomes: Learnt about Machine Learning, and concepts in the field of Pricing and Revenue management, its generation and optimization and how can dynamic pricing and better forecasting help in revenue.

Brief Description of working environment, expectations from the company: Though no defined project was given, but was assigned various tasks to do in various projects, so good exposure and nice working environment.

Academic courses relevant to the project: C, OOP, POE and other AI and Machine Learning related courses.

PS-II Station: Lavelle Networks, Bangalore

Student

Name: Palash Anand (2016H1490255P)

Student Write-up

Short Summary of work done during PS-II: Market Research, Database Creation, Email Marketing, Lead Generation.

Tools used (Development tools - H/w, S/w): Email Hunter, Bounceless, Dossierc.

Objectives of the project: To do market research, generate database, email marketing and lead generation.

Major Learning Outcomes: Market research, database generation, email marketing, lead generation, SD-WAN Solutions.

Brief Description of working environment, expectations from the company: The work environment is of a start-up, is getting structured with time. The company provides proper guidance and support.

Academic courses relevant to the project: E-Business and Internet Marketing, Marketing Research.

Name: Shashank Shekhar (2016H1490260P)

Student Write-up

Short Summary of work done during PS-II: At the time of joining the company, it had no Marketing team or Strategy. So, the experience we gained here has much more useful implication as we did everything from the scratch rather than following an already defined and streamlined process. B2B marketing is a lot different from B2C marketing as we have highly specified, context aware, influential as well as highly educated customer, where most of the customers are representing an enterprise or a business. For this type of customer direct marketing become obsolete and Digital Marketing or through partner channel are the only way to generate a lead. The whole workflow was divided into 3 parts. 1)Research Work (Market, Competitive, Product Research). 2)Strategy (Social Media Marketing, Content Marketing, Email Marketing). 3)Execution (Website Revamp, Twitter, LinkedIn, Facebook, Instagram & Pinterest, Database Generation, Content Generation, Blogs, Infographics, Sales Cadence etc).

Tools used (Development tools - H/w, S/w): HootSuite, Hashtagify, EmailHunter, Bounceless, SurveyMonkey, MailChimp, SEM Rush, Adobe Photoshop, Canva, Slack and Atlassian.

Objectives of the project: Execute the digital marketing strategy for higher visibility of the organization as a brand, which will finally help in lead generation and effective Customer Relationship Management (CRM).

Major Learning Outcomes: This project gave me an idea of how to start Marketing Campaign from the scratch. I had some hands on experience in Marketing Research, Buyer Persona creation, Social Media Marketing, Database creation, Website wireframe and content creation, Email Marketing, Content Marketing, Search Engine Optimization and Search Engine Marketing. Apart from these I also got some experience on tools used for Digital Marketing.

Brief Description of working environment, expectations from the company: As the Company itself is a startup, the work pressure is highly flexible. Sometimes it would be high sometimes very low. The office is in a very small space so you cannot expect any treatment like MNCs. However, most of the team occupy the same space, so you are free to ask any kind of questions or doubt from any department. Most of the senior guys are from well reputed firms having some great industry experience. Even they will never say no to any kind of discussion and if they are super busy, they will take your doubts and mail it to you. Too many learning opportunities.

Academic courses relevant to the project: Marketing, E-Business and Internet Marketing, Product and Brand Management, Quantitative Methods.

Name: Ayush Ganguly (2016H1490259P)

Student Write-up

Short Summary of work done during PS-II: Worked here as a Digital Marketing Intern. Performed series of marketing activities starting from Competitor Research, Market analysis, Social Media Marketing, Wrote content for the website. Designed and implemented email marketing campaign to attract and close converts.

Tools used (Development tools - H/w, S/w): MS Excel, Hootsuite, SocialPilot, Bounce-less, Mail-Chimp, Survey-Monkey, Canva, Hashtagify.

Objectives of the project: To execute the digital marketing strategy for higher visibility of the organization as a brand, which will finally help in lead generation and effective Customer Relationship Management (CRM).

Major Learning Outcomes: Basics of Brand Building, Using tools of digital media to increase brand awareness.

Brief Description of working environment, expectations from the company: Conducive work environment, highly skilled upper management, great room for creativity. A lot of responsibilities are given to the interns and they are made accountable for their actions. Clear goals and expectations.

Academic courses relevant to the project: Digital Marketing, Google Adwords, Hubspot Inbound Marketing.

PS-II Station: LHD INDIA, Bhopal

Student

Name: Kaustubh Pool (2014A8PS0470G)

Student Write-up

Short Summary of work done during PS-II: The projects assigned were huge to be completed in time by one intern so we divided the tasks amongst ourselves and developed an in-house payment collection solution for LHD to easily receive payments from customers ordering by call, or website or app. This portal allows merchant to send payment link to customer and customer can pay online by four gateways that have been integrated. Credit is deposited to LHD's account in those gateways which can later to be credited to respective merchant's account. Developed an ecommerce web application which is a portal designed for grocery delivery in Bhopal. Portal allows customer to easily browse over thousands of grocery products divided in several categories and order them online. Basket operator employees get instant update about placed order on their dashboard via the operator application. They assign delivery task to delivery agents and track task status and agent location in real-time. Apart from these bigger tasks, some side work as a break from these tasks involved developing a festive specific offers web application for LHD and some web scraping projects using "Scrapy" in Python.

Tools used (Development tools - H/w, S/w): Python-3.6, Django-1.11 , HTML, CSS, JavaScript, JQuery, Bootstrap.

Objectives of the project: Creating internal invoicing system for customer payments, Development of LHD Basket and Basket operator websites Grocery branch of LHD.

Major Learning Outcomes: Full Stack web development with Python in Django Framework, Javascript, JQuery etc. Working with 3rd party APIs and building own REST APIs for both website and mobile apps, Web Scraping.

Brief Description of working environment, expectations from the company: Small teams and startup culture requires you to give your hundred percent to the work. Interns are like full time employees, although the working time is Monday to Saturday 10 to 7, we generally end up working till 8 and in rare case 9 to 9:30 PM. Interns are completely responsible for the tasks assigned, and since its a small team you get to build things from the ground up and rectify the problems faced in the initial stages.

PPO is not to be expected here, but learning opportunities are huge. The work done here by interns has a real impact and they get to see their projects live and impacting so many people.

The company provided a good accommodation, and free food. I got an iMac to work on my projects.

Academic courses relevant to the project: Object Oriented Programming.

Name: Piyush Tiwari (2014A8PS0417G)

Student Write-up

Short Summary of work done during PS-II: Created an in-house payment solution for LHD to easily receive payments from customers ordering by call. This portal allows merchant to send payment link to customer and customer can pay online by four gateways that have been integrated. Credit is deposited to LHD wallets in those gateways which can later to be credited to respective merchant's account. Developed LHD BASKET which is web-based portal designed for grocery delivery in Bhopal. Portal allows customer easily browse over thousands of grocery products divided in several categories and order them online. Basket operator employees get instant update about placed order on their dashboard. They assign delivery task to delivery agents and track task status and agent location in real-time.

Tools used (Development tools - H/w, S/w): Python-3.6, Django-2.0, HTML, CSS, JavaScript, jQuery, web sockets.

Objectives of the project: Creating internal invoicing system for customer payments, Development of LHD Basket and Basket operator websites Grocery branch of LHD.

Major Learning Outcomes: Full Stack web development with Python in Django Framework, Payment Gateway Integration.

Brief Description of working environment, expectations from the company: Friendly and peaceful working environment. Small IT team. Interns are expected to work to their full potential keeping in mind end-user requirements from products they are developing. Overall great learning experience.

Academic courses relevant to the project: Python programming language.

PS-II Station: MathWorks India Private Limited, Bangalore

Student

Name: Suraj Mankulangara (2016H1030069P)

Student Write-up

Short Summary of work done during PS-II: Worked with Technical Support team to address customer's technical queries. Exposure to multiple products. Worked with Simulink Design Verifier team to enhance some of the features offered by this product.

Tools used (Development tools - H/w, S/w): MATLAB, C++, Perforce.

Objectives of the project: Quality Assurance, enhancement features.

Major Learning Outcomes: Effective communication with customers, leveraging team knowledge and experience productively, some product knowledge of MATLAB, Simulink and other products offered by MathWorks, problem solving skills, team work.

Brief Description of working environment, expectations from the company: Expected to show independent initiative and leadership. Atmosphere is not constrained, and experimentation is encouraged. Good communication skills expected. Being a team player is critical. Work is usually interesting but challenging. Passion is encouraged. Good work-life balance.

Academic courses relevant to the project: Object Oriented Programming, Programming Languages and Compiler Design.

PS-II Station: Media Iq Digital, Bangalore

Student

Name: Prakarsh Chauhan (2013B3A40599G)

Student Write-up

Short Summary of work done during PS-II: Advertising Campaign Management for the past one year of internship. It involves analysing data, devising strategies and hence improving the performance. Providing with high quality deliverables with respect campaigns as well the other side projects that helps you to learn and grow in the company.

Tools used (Development tools - H/w, S/w): SQL, Advance Excel, Hive, R.

Objectives of the project: To automate the post campaign insight report.

Major Learning Outcomes: Achieved the objectives.

Brief Description of working environment, expectations from the company: MiQ provide with an encouraging environment to work in. People around here are very helpful.

Name: Manish Pathak (2013B5A30671G)

Student Write-up

Short Summary of work done during PS-II: Worked on developing and testing Feature Selection Service at Media iq.

Tools used (Development tools - H/w, S/w): Spark,Python,Hive.

Objectives of the project: Developing a generalized service platform for FSS.

Major Learning Outcomes: Industry experience, software development and testing.

Brief Description of working environment, expectations from the company: Good environment. Will get a chance to explore and work freely.

Academic courses relevant to the project: Data Mining.

Name: Harshal Goel (2013B3A30638G)

Student Write-up

Short Summary of work done during PS-II: Work is mainly related to excel and power point where you have to analyse the data and create a report out of it. Apart from that a few projects can be taken up in the fields of automation or data analysis etc.

Tools used (Development tools - H/w, S/w): Excel, SQL, Power Point

Objectives of the project: Report Automation

Major Learning Outcomes: Gained good knowledge about VBA and SQL.

Brief Description of working environment, expectations from the company: Gained good knowledge about VBA and SQL.

Academic courses relevant to the project: Learning Excel and SQL would be useful, although they give proper training in the first week.

PS-II Station: Microsoft India Development Center, Bangalore

Student

Name: George Joseph (2013B5A70112G)

Student Write-up

Short Summary of work done during PS-II: Cosmos Database Team. Learn about ADLS and Convergence: Build a comprehensive end to end test suite to validate migration fidelity in Cosmos to ADLS upgrade. Automated bootstrapping of RslHk rings on clusters.

Tools used (Development tools - H/w, S/w): C#, C++, Powershell.

Objectives of the project: Auto-bootstrapping.

Major Learning Outcomes: Distributed Systems.

Brief Description of working environment, expectations from the company: Very flexible work hours. Free food and accommodation. Fun work environment.

PS-II Station: Microsoft India Development Center, Hyderabad

Student

Name: Deep Vyas (2014A7PSO248P)

Student Write-up

Short Summary of work done during PS-II: I worked in the Microsoft Kaizala division as a part of the Custom Actions Team. Kaizala is a mobile app and service designed for large group communications and work management. Most of the work in the duration of internship involved Front-End Web development and Android Development. Kaizala has a feature where in developers can make custom interactive Front-end only web actions and post them as Chat Messages. This is developed and managed by Custom Actions Team. The work involved developing a few Games as a part of initiative to increase user interaction. Apart from that it also involved taking up various tasks to improve and extend the functionality of the Action Design Platform, which is a framework made so that any developer can make their own Kaizala Actions and publish and use them in their work groups. The tasks involved adding features to the JavaScript SDK which is the part of the framework and improving performance of a rendering logic which allowed developers to design how the Custom Action chat card should look like by providing the markup as a JSON whose schema was made public. Also, a POC was done to show that a feature of allowing third party OAuth can be developed into the Actions Framework.

Tools used (Development tools - H/w, S/w): Android Studio, Git.

Objectives of the project: Add Games to Kaizala and improve the features of the Action Design Platform.

Major Learning Outcomes: Through the project I received deeper understanding of development of Cross-Platform applications and also about how Android applications at such complex scale are designed and managed. It also gave exposure to how Android manages and runs Application Activities.

Brief Description of working environment, expectations from the company: Microsoft has a extremely relaxed work environment. There are no strict working hours and everyone is given their freedom to work at their comfortable time and pace. Also, people are really supportive and appreciative of others ideas and opinions. The only expectation from the team and company is the completion of work by the decided timeline. Also, the deadlines are practically decided and not too intensive.

Academic courses relevant to the project: Object Oriented Programming.

Name: Smit Patwa (2014A7PS0099P)

Student Write-up

Short Summary of work done during PS-II: I was in a core service team which handled all the user contact data for Microsoft. I was given multiple project. First project was for an internal tool used by the team. I had to add a feature to the tool. Technologies used in it were C#, .NET, Universal Windows Platform. The second project was a bit longer one. I had to create a portal for a service given by the team. The portal was to be made from scratch using React, Redux, Typescript and other companion technologies. There were also some projects related to bugs in the main app. I was also involved in adding some other features for the main app.

Tools used (Development tools - H/w, S/w): C#, .NET, React, Redux, Typescript, Jest, Universal Windows Platform.

Objectives of the project: To build features for the services given by the team.

Major Learning Outcomes: How to create a project End to End. Starting from dev phase to production.

Brief Description of working environment, expectations from the company: There was no stress of work. Work timings were flexible. The pantry was always full with lots of food. Mentor was very cooperative and we discussed all the solution before I implemented it. The level of work was average and mainly involved development work.

Academic courses relevant to the project: Computer Programming, Object Oriented Programming.

Name: Shivam Gupta (2014A7PS0066P)

Student Write-up

Short Summary of work done during PS-II: I interned in Azure Networking team at Microsoft Hyderabad. The project aimed at adding an API level Authorization on Hardware Proxy to prevent unauthorized API access to the devices in Microsoft's data centers. Hardware Proxy as a service exposes multiple APIs which helps to perform various things like configure, updates etc. on the devices in the data centers. Hardware Proxy before had authentication but no authorization i.e. once an application has been authenticated into the cloud, it has access to all the APIs on Hardware Proxy. This means a

Cisco vendor could run a configure command on say Nexus devices. The project restricted applications access by providing only the relevant APIs, preventing cross vendor device access in the data centers.

Tools used (Development tools - H/w, S/w): Tools - Git, Perforce, Visual Studio, Azure kusto, XTS (internal cluster management tool). Language - C#, python, java.

Objectives of the project: The project aimed at adding API level Authorization on Azure cloud service named Hardware Proxy.

Major Learning Outcomes: 1. Extensive use of version controls like Git, Perforce. 2. Learned C#. 3. Realised the importance of efficient coding styles as computational delays of even few milli seconds can cost millions to the company.

Brief Description of working environment, expectations from the company: Work Culture at Microsoft is very good. You will get to work with some really bright people. Projects and quality of work is highly team dependent. No strict working hours.

Academic courses relevant to the project: Data Structures and Algorithms, Computer Networks, Object Oriented Programming.

PS-II Station: MoEngage India Pvt. Ltd., Bangalore

Student

Name: Shrinil Thakkar (2014A7PS0860H)

Student Write-up

Short Summary of work done during PS-II: Got to know how to actually code at an industry level and build highly efficient solutions. Worked with lot of new softwares like ElasticSearch, travis, sphinx, drone, kibana. Mostly around software development and data extraction and smart solutions for the problems faced.

Tools used (Development tools - H/w, S/w): Python, MongoDB, ElasticSearch, travis, sphinx, drone, kibana.

Objectives of the project: Automation for documentation and testing of code.

Major Learning Outcomes: Got to know how to actually code at an industry level and build highly efficient solutions.

Brief Description of working environment, expectations from the company: The company expects you to be very good with the basic programming concepts and knowing about python and mongodb is a plus. Very friendly environment to work in.

Academic courses relevant to the project: Database management systems, data structures and algorithms.

Name: Shubham Agarkar (2014A7PS0085G)

Student Write-up

Short Summary of work done during PS-II: I worked for multiple projects for the company. One of the major projects involved creating a new channel using pull architecture and serving real time trigger notifications which support all of MoEngage's features such as segmentation, localization, dynamic multivariate etc. I was also working on optimizing a ~real time event processing system that was the backbone of MoEngage's event trigger capabilities. The system offered insight into stream processing, handling multi level caches and maintaining consistency across distributed systems in general. I was also

working on many side projects which improved my ability to read, understand and write better code. The work allotted to me definitely helped me learn the ropes of software development.

Tools used (Development tools - H/w, S/w): Python, MongoDB, Redis, Java, Kafka, Samza, S3.

Objectives of the project: Create a real time Trigger channel, Integrate it with all of MoEngage's existing functionality, ensure that it works even when the device is offline, handle heavy amount of scale from MoEngage's premium customers.

Major Learning Outcomes: API development, Pull Architecture, Edge computing.

Brief Description of working environment, expectations from the company: The company has an open office space, ex- I used to sit next to my Director of Engineering. Colleagues are helpful, supportive and knowledgeable. The work culture is dependent on your team, but mostly it is relaxed provided that you achieve your targets according to your estimates. The timings are very flexible, but most people come in around 11:30 am and leave by 7:30-8. The company provides free meals 2 times a day and places great focus on employee satisfaction. The management takes initiative to create tea and company events so that the bonding is high across the organization. The best part about MoEngage are its people who despite being some of the brightest people in the industry are exceedingly humble and committed to helping each other grow. I would definitely recommend MoEngage for someone who wants to learn software development and is not afraid of taking on challenges.

Academic courses relevant to the project: Software Development, Distributed Computing.

PS-II Station: MSCI (NPD Index Research), Mumbai

Student

Name: Abhishek Dixit (2013B3A70833P)

Student Write-up

Short Summary of work done during PS-II: The MSCI Women's Leadership Index (the Index[®]) aims to represent the performance of those companies that exhibit a commitment towards gender diversity among their board of directors (Board[®]) and among the leadership positions. The index aims to include companies which lead in their respective countries in terms of female representation in Board and in leadership positions. The Index is rebalanced on a quarterly basis to coincide with the regular Index Reviews (Semi-Annual Index Reviews in May and November and Quarterly Index Reviews in February and August) of the MSCI Global Investable Market Indexes. The project involved conducting semi annual and quarterly index reviews for the women in leadership indexes.

Tools used (Development tools - H/w, S/w): MS Excel, Matlab.

Objectives of the project: Conduct Semi Annual and Quarterly Index Reviews for MSCI Women in Leadership Indexes.

Major Learning Outcomes: Knowledge of MSCI Indexes. Knowledge of Matlab and MS Excel

Brief Description of working environment, expectations from the company: Good work culture, a little attrition between NPD and IMR teams, great disparity in the work given to interns who work for one semester as compared to interns who work for both semesters.

Academic courses relevant to the project: Derivatives and Risk Management Securities Analysis and Portfolio Management. Financial Management.

Name: Rajat Seth (2013B3AA0725H)

Student Write-up

Short Summary of work done during PS-II: Made new indexes for clients all the way from Factor indexes to Factor and ESG (Environment, Social, Governance) combination. Also a major running project was the

transition of an existing index from one model to another which involved thorough research and testing before sending it live in production.

Tools used (Development tools - H/w, S/w): MATLAB, SQL, EXCEL

Objectives of the project: New Index Creation and Transition of an existing Index to a new model

Major Learning Outcomes: Portfolio Creation and Analysis

Brief Description of working environment, expectations from the company: The working environment is great. People are knowledgeable and extremely helpful.

Academic courses relevant to the project: Security Analysis of Portfolio Management.

PS-II Station: NetApp, Bangalore

Student

Name: Ankit Chaniyara (2016H1030021G)

Student Write-up

Short Summary of work done during PS-II: Unit Test and SVM GET REST API in ONTAP

Tools used (Development tools - H/w, S/w): CxxTest Framework

Objectives of the project: Improve Code Coverage and implement SVM REST API in ONTAP

Major Learning Outcomes: How to effectively create unit test and how to deal with smf.

Brief Description of working environment, expectations from the company: It is learning activity to do project in ontap and get more understanding of ONTAP , as it is a system-level company , expectation was to do system programming , and i got hands on system programming.

Name: Piyush Dhingra (2013B3A70710G)

Student Write-up

Short Summary of work done during PS-II: The work was basically related to machine learning. Extracting data from the company's storage system and run machine learning tools on the acquired data to get useful results.

Tools used (Development tools - H/w, S/w): Machine Learning, R, Python, Excel.

Objectives of the project: Predicting CPU busy.

Major Learning Outcomes: Data Extraction and running LR, SVM, K-nearest neighbor models etc.

Brief Description of working environment, expectations from the company: Working environment is very flexible with top class facilities such as gym, aerobics, table tennis, football, cricket ground, badminton court. Also beer bash on every Friday.

Academic courses relevant to the project: Machine Learning.

Name: Palak Sharma (2016H1030033H)

Student Write-up

Short Summary of work done during PS-II: We calculate trusted fingerprints for data moved to cloud and store it in performance tier. Use Trusted FingerPrint to dedupe incoming writes against data already in the cloud without paying the cost of reading the data from the cloud. Thus, we will be able to achieve more savings on data and provide better \$/GB in the same infrastructure.

Tools used (Development tools - H/w, S/w): C

Objectives of the project: Our aim is to use strong cryptographic fingerprints for data and dedupe incoming writes against data already in the cloud without paying the cost of reading the data from the cloud.

Major Learning Outcomes: Learned kernel level coding and deduplication of data blocks. Learned sending and reading data blocks from cloud. Handled projects from requirement phase to development, testing and delivery phase.

Brief Description of working environment, expectations from the company: A very good place to work and has scope for growth when proved the talent. Best facilities and work life balance offered. Very friendly people. Best in the competition for cloud storage company. Best in transport facilities.

Academic courses relevant to the project: Advanced Operating System and cloud computing.

Name: Rishikesh S (2016H1030016G)

Student Write-up

Short Summary of work done during PS-II: Write Anywhere File System (WAFL) is used by Netapp to accommodate high performance storage such as RAID arrays so that in the event of a crash or a power failure, long checks for consistency are not required. In Linux File Systems, fsck is used to do consistency checks in the event of a crash. Journaling file systems keep an on-disk log of write operations to the file system. When the entirety of a write operation is in the log, then the file system begins rewriting the changes to their final location on disk. If the system crashes or something else goes wrong, then the journal entry is still on-disk on the next mount, and the file system will finish replaying the entry, so that

the entire self-consistent set of changes to the metadata will go to disk. WAFL has two tools to detect and fix file system consistencies: WAFL_check and wafiron. The primary difference between the two is that wafiron runs while the system is up and serving data, while WAFL_check runs while the system is down. Historically, a lot of process were written for a uniprocessor environment. Work has been done to port these to a multiprocessing environment. My project involves investigating parallelism of processes that are affected when WAFLiron is running and finding solutions for it and also moving components out of the serial domain.

Tools used (Development tools - H/w, S/w): C, Vsim.

Objectives of the project: Investigating parallelism of processes that are affected when WAFLiron is running and finding solutions for it and also moving components out of the serial domain.

Major Learning Outcomes: WAFL Internals.

Brief Description of working environment, expectations from the company: The environment here at NetApp is quite relaxed, yet it taught me how to behave in the workplace. Simply working in the office and getting used to everything here has definitely prepared me for whatever my next position may be. Just observing the everyday events has taught me more about teamwork, and how people can come together to get things done. Although sometimes I have to remind myself to use my inside voice, I feel I have adapted to the office life relatively well.

Name: Garvit Raghuvanshi (2013B2A70754G)

Student Write-up

Short Summary of work done during PS-II: Worked on building machine learning models to further enhance the workload signature clustering and classification.

Tools used (Development tools - H/w, S/w): R, Python.

Objectives of the project: To explore and experiment machine learning models on NetApp counter dataset.

Major Learning Outcomes: Increased exposure in the field of machine learning.

Brief Description of working environment, expectations from the company: The working environment is great. No strict deadlines. Pretty understanding mentors.

Academic courses relevant to the project: Machine Learning, Neural Networks, Information Retrieval, Data Mining.

PS-II Station: NetSkope Software India Pvt. Ltd., Bangalore

Student

Name: Prakhar Khandelwal (2014A7PS0039G)

Student Write-up

Short Summary of work done during PS-II: Project done during PS-II include: 1) Checking if a client account follows PCI/CIS guidelines on public cloud platform like AWS, Microsoft Azure so that they can be certified by PCI/CIS. 2) Fixing Bugs for a service's platform.

Tools used (Development tools - H/w, S/w): Python.

Objectives of the project: To provide support for PCI, CIS rules on public cloud like AWS, Microsoft Azure.

Major Learning Outcomes: Knowing intricacies of Python, learning how industry level code is and the cycle it goes through before going in production.

Brief Description of working environment, expectations from the company: Friendly working environment, teammates always willing to help.

Academic courses relevant to the project: Computer Programming, Object Oriented Programming, Basic knowledge of databases.

Name: Ajay Yadav (2014A7PS0106G)

Student Write-up

Short Summary of work done during PS-II: Our project involved implementing internet security standards which exists to protect user's sensitive data and stop online threats. These standards are set by renowned and trusted organizations for e.g. HIPPA for healthcare, PCI-DSS for payment industry, etc. The rules were implemented on two major cloud service providers which are Amazon Web Services and Microsoft Azure.

Tools used (Development tools - H/w, S/w): AWS Python SDK - boto3, Azure python SDK

Objectives of the project: To support various security profiles such as CIS, PCI, HIPPA on AWS and Microsoft Azure.

Major Learning Outcomes: How to write unit tests for the code you have written (including mocking), basics of git, debugging and how a custom domain specific language is developed.

Brief Description of working environment, expectations from the company: Work environment is good, people are friendly, flexible work hours, work is not that hectic. Mentors are always willing to help. You will get to learn the basic tools to get you started in the field of software development. Work is mainly in the field of cloud security and it will mostly in python. Its good but not very challenging. Chances of getting a PPO is high.

Academic courses relevant to the project: Computer Programming, Compiler Construction, OOP, Cloud Computing.

Name: Priyank Lodha (2014A7PS0021G)

Student Write-up

Short Summary of work done during PS-II: Most the organizations are now shifting to Cloud. Thus, cloud security is becoming a big concern for various companies. The project is about implementing various security standards which exists. like PCI-DSS for payment card industry, HIPPA for health-care, etc. The work wasn't really challenging after the initial phase of learning. Later on I got to work on the backend of the platform which was kind of better than the previous work.

Tools used (Development tools - H/w, S/w): Git, Python.

Objectives of the project: Implement security standards for the profiles PCI-DSS(Payment Card Industry Data Security Standard) and CIS (Centre for Internet Security) on AWS and Azure.

Major Learning Outcomes: Working with Azure & AWS APIs, Working with technologies like Kafka, MongoDB, Redis.

Brief Description of working environment, expectations from the company: Working conditions are good. Mentors don't really push you to work. You can take up tasks and work at you own pace. But overall work isn't really challenging.

Academic courses relevant to the project: DSA, Compilers

Name: Atul Parthasarathy (2014A7PS0122G)

Student Write-up

Short Summary of work done during PS-II: My project involves implementing internet security standards which exists to protect user's sensitive data and stop online threats. These standards are set by renowned and trusted organizations for e.g. HIPPA for healthcare, PCI-DSS for payment industry, etc. I mostly worked on enhancing NetSkope's custom Domain Specific Language and writing rules for the above mentioned security standards for Amazon Web Services (AWS) and Microsoft Azure (Azure).

Tools used (Development tools - H/w, S/w): Python, Amazon Web Services, Microsoft Azure

Objectives of the project: Implementing Cloud Security Standards For AWS and Azure.

Major Learning Outcomes: Learnt Python, AWS, Microsoft Azure and Git. Also learnt how to debug code from a large code base. Got exposure to full cycle of software development from design to deployment.

Brief Description of working environment, expectations from the company: All the teammates are very friendly and are ready to help. The best part is you will not be treated as intern.

Academic courses relevant to the project: Compilers

PS-II Station: Nucleus Software Export Ltd, Noida

Student

Name: Abhilash Dhar (2014A8PS0514G)

Student Write-up

Short Summary of work done during PS-II: Development of a UI that allows interactive object-to-object mapping and automates the XML generation process for it.

Tools used (Development tools - H/w, S/w): Angular, Node, D3, JavaScript

Objectives of the project: Develop UI for O2O mapping

Major Learning Outcomes: Angular Framework

Brief Description of working environment, expectations from the company: It's a 5 day week, with 9 hours every day. The expectations are moderate, and you will be asked to do work that is not pertaining to your project as well.

Name: Rishabh Srivastava (2013B5A80674G)

Student Write-up

Short Summary of work done during PS-II: Worked on natural language processing. work was mostly in the areas of sentiment analysis, text classification, natural language generation and building conversational AI.

Tools used (Development tools - H/w, S/w): Python, Spacy, Tensorflow, pytorch, ELK stack

Objectives of the project: To improvise user experience

Major Learning Outcomes: NLP implementations with Deep Learning.

Brief Description of working environment, expectations from the company: The work environment is good, managers expect reasonable amount of work to be done. most important, people here know what they are doing.

Academic courses relevant to the project: Maths 2, probability and statistics, maths 1

Name: Akshit Goel (2013B5A30827G)

Student Write-up

Short Summary of work done during PS-II: I started my internship at Nucleus Software with NSBT training for learning Core Java and Other Frameworks used in Banking Technology .This training was very useful .Later I started with working on Spring framework, Hibernate framework and JDBC to operate on Oracle SQL database which is also used in banking technology. With time I started writing different POC's(proof of concepts) which helped to implement all the crucial concepts of Java and different frameworks. Deploying these small projects on Apache Tomcat Server added to my experience of software development. During the last month i carried out the research work to improve the performance of the product of our company and integrated different frameworks to test the product with the cluster server.

Tools used (Development tools - H/w, S/w): Eclipse,Java,Oracle SQL,Apache tomcat

Objectives of the project: To improve the quality of the product of the build and to reach the desired performance results.

Major Learning Outcomes: Learning of Core Java, Spring Framework, Hibernate Framework, Oracle SQL and other useful frameworks in banking technology adds up to the experience of software development using Java programming Language.

Brief Description of working environment, expectations from the company: Nucleus Software provides a good learning environment and provides required training for transition between knowledge and implementation. An enthusiastic environment in the team provides you sufficient motivation for the growth. A strict discipline of minimum daily working hours is unique and helps people whose life is centered around their work.

Academic courses relevant to the project: Computer Programming I, Introduction to Java Programming(CTE)

Name: Shivendra Kumar (2013B5A30621G)

Student Write-up

Short Summary of work done during PS-II: Worked as a webapp developer and used sprin, hibernate and hibernate search. Also worked on making the product more scalable and highly available using no sql DB Redis.

Tools used (Development tools - H/w, S/w): Hibernate Search, Redis, Infinispan, jgroups

Objectives of the project: To make the product horizontally scalable and highly available.

Major Learning Outcomes: Got some deep insights in HA concepts. Learnt how different components interact to make software product work.

Brief Description of working environment, expectations from the company: Working environment is good. Company expects interns to do the Research and development for them according to the company's requirements. Work hours sometimes get stretched.

Academic courses relevant to the project: Object oriented programming

Name: Shikhar Wadhwa (2013B2A30899G)

Student Write-up

Short Summary of work done during PS-II: Used various NLP and deep learning techniques to build a few banking related services for the company.

Tools used (Development tools - H/w, S/w): Python, Java, Spacy, JavaScript

Objectives of the project: To build an intelligent banking query handler.

Major Learning Outcomes: Learnt about the practicalities of AI and Machine learning as well as web service flow and good experience of Front End development.

Brief Description of working environment, expectations from the company: The working environment is very professional yet relaxed. Being in the R&D team me never had any hard deadlines, but regular updates about the status of the project were required from me on almost a daily basis.

Academic courses relevant to the project: Machine Learning.

Name: TUSHAR (2013B1A30883G)

Student Write-up

Short Summary of work done during PS-II: Monitoring of web application through the analysis of application logs.

Tools used (Development tools - H/w, S/w): Elasticsearch, Logstash, Kibana, Java

Objectives of the project: Application Monitoring

Major Learning Outcomes: Linux fundamentals, devops fundamentals.

Brief Description of working environment, expectations from the company: The company needs to invest more time in the implementation of latest technologies in the field of system administration and automation.

Academic courses relevant to the project: Object Oriented Programming, Data Communication and Networks.

PS-II Station: Nutanix Technologies India Pvt. Ltd., Bangalore

Student

Name: Vinay Datta Renigunta (2014A7PS0509H)

Student Write-up

Short Summary of work done during PS-II: I worked in the Infrastructure team at Nutanix. For the first two months, I worked on HyperV, the Microsoft hypervisor. I had to implement a new algorithm to check if dependent infrastructures are part of the cluster for which I have written a patent. Later, I worked on Firewall and Network Segmentation in Nutanix clusters.

Tools used (Development tools - H/w, S/w): Python, Java, Linux, Powershell scripting

Objectives of the project: To implement a new check in Hyperv, and To improve the existing design and architecture of firewall and network segmentation

Major Learning Outcomes: Majorly, I have learnt how things go about in a company and how to use the knowledge I've obtained in college. I have learnt a lot about distributed systems and cloud computing. I have also learnt about how firewall works in clouds and how network segmentation would generate terrific results in a data center.

Details of papers/patents: P272049.US.01 (PAT-543) - Dependent Infrastructures should not be a part of the Nutanix Cluster -- Pending approval from the US Patent office.

Brief Description of working environment, expectations from the company: Nutanix has a very flexible and friendly work environment. The company focuses more on the amount of work completed rather than the hours spent at office. The company expects its interns to fix bugs as well in the component they're working on, apart from their projects.

Academic courses relevant to the project: Computer Programming, Object Oriented Programming and Design, Data Structures and Algorithms, Design and Analysis of Algorithms, Compilers

Name: Kevin Biju (2014A7PS0032H)

Student Write-up

Short Summary of work done during PS-II: The initial few months were spent on building a unit test monitoring system for internal use at nutanix. Had to implement features like Bug creation on single click, assigning monitoring duties, sending slack notifications to people on duty etc. The latter half included working with Amazon S3, Google cloud storage, minio and was spent predominantly on implementing object versioning compatibility with minio.

Tools used (Development tools - H/w, S/w): S3, GCS, minio, git, gerrit, jira, REST apis, goLang, Postgresql

Objectives of the project: 1. Build a unit test monitoring system, 2. Implement object versioning for minio

Major Learning Outcomes: Worked primarily in goLang which was a new language I hadn't used before. Worked on object storage technologies (S3,GCS, minio) and spent time on understanding their architecture and usage. Had hands on experience in contributing to an upcoming product of the company.

Brief Description of working environment, expectations from the company: People are really helpful and friendly. Lot of facilities like free food, cabs etc. Heavy work. Can be expected to work over the weekends as well. Some meetings can be held late into the night or very early in the morning depending on the team and project you are working on. Can get stressful at times because of the workload. But as a result, you get to learn a lot in a short period of time. Overall a very productive experience.

Academic courses relevant to the project: DBMS, OS, Networking.

Name: Pulkit Agarwal (2014A7PS0356G)

Student Write-up

Short Summary of work done during PS-II: I did not have a project as such, but was allotted different features (or parts of different features), so that I could get a hands on experience in reading and developing the entire application. Most features I worked on were to pre process the various forms of inputs that were used by the core application. Different teams would specify different formats which had to be converted to an input format that could be stored in a database which would be the input. This included taking data directly from Google Sheets or MS Excel, or YAML format, or JSON format

(basically their API). One other major feature I had was to take the data from an existing user's scenario, and create an analysis spreadsheet with it.

Tools used (Development tools - H/w, S/w): Software - Java, Spring Framework, MySQL using Hibernate

Objectives of the project: To learn about corporate work environment, using Spring Framework to develop REST API, pre processing outputs

Major Learning Outcomes: Learnt more about Java and Spring, and debugging and testing as well

Brief Description of working environment, expectations from the company: There was great synergy in the team. I was treated like a full time employee, and some of the features I worked on were discussed in meetings by other teams, especially some product managers, as well.

Academic courses relevant to the project: Object Oriented Programming, Database Systems

Name: Kratika Chandra (2014A7PS0127G)

Student Write-up

Short Summary of work done during PS-II: Modified a micro-service application's product packaging to run each service as Docker containers. Involved figuring out optimal layering approach for libraries and packages required for each services, user security permissions and capabilities to be granted, container orchestration process and host environment details.

Tools used (Development tools - H/w, S/w): Docker, Golang, Linux iptables, etc.

Objectives of the project: Containerisation of a micro-services application

Major Learning Outcomes: Learnt about Docker, boot2docker OS, RancherOS

Brief Description of working environment, expectations from the company: Working environment is relaxed. Work items are sufficiently spaced but deadlines are to be strictly met.

Academic courses relevant to the project: Computer Networks, Operating Systems

Name: Nidhi Kadkol (2014A7PS0026G)

Student Write-up

Short Summary of work done during PS-II: Documented the queries for Insights Data Fabric team. Converted a section of a query to flatbuffers from original protocol buffer implementation and did benchmarking on it. Based on overwhelmingly positive results, focused on converting a large payload query completely to flatbuffer implementation.

Tools used (Development tools - H/w, S/w): C++

Objectives of the project: To improve speed and memory efficiency by using flatbuffers instead of protobuffers

Major Learning Outcomes: Version Control (Git), vim editor, writing production level code, top-down approach to coding

Brief Description of working environment, expectations from the company: Flexible work timings. Weekly goals set in the form of tasks to be completed. Mentor/Manager/Other teammates always ready to help. Comfortable interactions with teammates.

Academic courses relevant to the project: DSA, OOP, CP

Name: Anish Shah (2013B1A70856P)

Student Write-up

Short Summary of work done during PS-II: Developed unit test modules for various in house engineering tools. Developed plugins for Resource Deployment Manager. Developed a data science pipeline to analyze the effectiveness of various sales campaigns.

Tools used (Development tools - H/w, S/w): Python, mock, git, postman, studio3T

Objectives of the project: Developed unit test modules and plugins for in house engineering tools

Major Learning Outcomes: Data Science and statistical approaches to modelling problems, using machine learning libraries, using mock libraries, Git framework, Creating unit testing modules, writing requests, pvVmomi, ESX, virtualization concepts, Docker tools, writing properly structured plugins.

Brief Description of working environment, expectations from the company: Awesome managers who are extremely skilled and challenge you to push yourself, along with great colleagues who are always ready to help. A great opportunity to learn new technologies and get an inside view how cutting edge engineering tools are built.

Academic courses relevant to the project: Operating Systems, Computer Architecture, Database Systems, Object Oriented Programming

Name: Bhuvnesh Jain (2014A7PS0028P)

Student Write-up

Short Summary of work done during PS-II: The projects included the following: Static and Dynamic memory usage optimisation in python for Task service, Refactoring of the complete Task service and fixing the root cause of some of the bugs, Fixing of critical customer found defects and bugs in the codebase, Working on algorithms for Scheduler. These were apart from the performance testing and bug fixes I did as part of my internship.

Tools used (Development tools - H/w, S/w): Python, Git

Objectives of the project: The objectives for each project differed from each other as I was involved in a lot of them.

Major Learning Outcomes: Multitasking of various bugs at a time, reviewing of other codes etc.

Brief Description of working environment, expectations from the company: The working environment and ethics are very good.

Academic courses relevant to the project: Data Structures and Algorithms, Object Oriented Programming, Operating Systems.

Name: Abhinav Gupta (2014A7PS0335P)

Student Write-up

Short Summary of work done during PS-II: Worked on the cluster diagnostic tool called nutanix cluster check (ncc). This service is used to check the cluster configuration and alert the user about any problems. The checks are related to network configuration, disk usage and other miscellaneous aspects like hardware, other services configuration, port and IP addresses open, firewall etc. It is the single point of information for the customer to know what is wrong with the cluster.

Tools used (Development tools - H/w, S/w): git, gerrit, jira, vim, kafka, zookeeper, go, python, google protobufs, google gflags, kernel system programming.

Objectives of the project: To develop a single portal for the customer to understand what's wrong with the cluster.

Major Learning Outcomes: learned development process in a company, development tools used, many open source libraries used, frequent team and discussions.

Brief Description of working environment, expectations from the company: The Company provides flexible working hours. There is no in or out time and time is not logged. The dress code is casual. The pantry is awesome and provides all kinds of drinks and eatables. The team environment is dynamic and communication is easy. You can talk with anyone. Flat work culture. You are expected to work as and when required. Team meetings can occur at night with team mates in other countries. There is always work and you would never feel unused or feel like you are not contributing enough. Frequent team outings. Enough leaves. Cab and phone reimbursements. Gym and 3 meals throughout the day.

Academic courses relevant to the project: Distributed computing

Name: Abhinav Tiwari (2014A7PS0049P)

Student Write-up

Short Summary of work done during PS-II: I was assigned to the file services team and was required to work on the product developed(NAS over SAN). The major work done can be summarized as: 1.

Developed a C++ based ReST SDK to perform API calls. 2. Added new commands related to File server backup in the native CLI, along with some other features. 3. Developed Health Webpage monitoring the various components of the file server. 4. Developed Docker framework for testing purposes and integrated in existing framework as a replacement for VMs. 5. Added analysis of file server in the existing log analyzer framework. 6. Added support for backup of hardlinks in the the ZFS backup framework.

Tools used (Development tools - H/w, S/w): Git, Jenkins, Gerrit, JITA, Swagger, Libcurl, ZFS, Samba, Protobuf, Golang

Objectives of the project: To gain an understanding of the existing File Server design architecture and expand its capabilities.

Major Learning Outcomes: Design Document Principles, Product Development Workflow, Communication Skills

Brief Description of working environment, expectations from the company: The working environment here at Nutanix asks one to be humble, honest and hungry. Folks here are quite experienced and hence, have a deep and clear understanding of the systems-in-work which they are eager to share with the seeking ones. It is an employee-centric culture, hence there are a lot of employee perks. Various kinds of leadership, health, sports etc. events are organized from time to time to have a change in the pace of work. The work requires design development approach before implementation, which improves the quality of work delivered. The company has seen a very strong growth rate and is currently placed amongst leaders in the HyperConverged Infrastructure(HCI) segment of the industry it resides in, hence, a good company to work for.

Academic courses relevant to the project: DSA, Computer Networks, Network Programming, Computer Programming, Object Oriented Programming.

Name: Lakshit Bhutani (2014A7PS0095P)

Student Write-up

Short Summary of work done during PS-II: The most important measures of cache performance are latency per entry addition/retrieval/eviction (latency measures) and hit rate. A good performing cache

should not have high latencies and at the same time provide good hit rates. The project aims to build a smart enough cache (that can provide higher hit rates from the conventional caching algorithms, that can adapt to changing data access patterns) without much latency overhead. The solution proposed is a light weight version of the K-means algorithm. The online K-means algorithm with online feature selection can be used. The cache is represented by clusters of cache elements. Each cache element is represented by a set of feature values that can be used by the algorithm to place in the appropriate cluster. Each cluster has its hit rate as a sliding window stat and the timestamp of the oldest element of the cluster (can be used as an additional criterion in evicting an element).

Tools used (Development tools - H/w, S/w): Vim, CMake, Google protobufs, Google flags, Nutanix clusters

Objectives of the project: Intelligent Cache Eviction Algorithm

Major Learning Outcomes: Dynamic feature selection in changing workloads by the algorithm. Also support for priorities of cache entries.

Brief Description of working environment, expectations from the company: The work environment is excellent with constant support from the mentors and supervision from the manager in charge. There is complete freedom in doing the work in a way one wants to. There is regular sync ups where the team discusses the different projects in pipeline and also design discussions.

We also go for team lunches and outings which helps in better team bonding. People are extremely smart and helping whenever I face any problems.

Academic courses relevant to the project: Data Mining, Machine Learning

Name: Suhas S Pai (2014A7PS0005G)

Student Write-up

Short Summary of work done during PS-II: Full stack web development: I worked with the SaaS Engineering Development Operations team on the various web applications managed by them such as Support Portal, Watchtower and Gatekeeper. The applications are built on a Javascript stack (Backend being Node.js and SailsJS, and front end being jQuery, vanilla Javascript, HTML and CSS). Most of the work was front-end, related to page redesign, content modification, style & behavior changes, form

validation etc. Some of the back end work includes creation of models/controllers and writing code related to record lookup and modification. Some major tasks include creation of X-Ray token page, Node.js version upgrade in Support Portal, Guest OS compatibility matrix etc.

Tools used (Development tools - H/w, S/w): Node.js, jQuery, HTML, CSS, Javascript, SailsJS, MongoDB, ReactJS, Jade

Objectives of the project: Full stack web development

Major Learning Outcomes: Working of scripting languages, how to debug front-end and back-end code, full-stack web development, database handling, website deployment and testing

Brief Description of working environment, expectations from the company: Development is carried out in code sprints, which are 3-4 week periods of completing various assigned tasks. The working hours are flexible, as long as work gets done in each code sprint. The dress code is smart casuals, and there is no formality in addressing co-workers as everyone goes on a first name basis. Often, meetings can be held within the India team or even with the US team either early morning or at night and interns get to be a part of them as well. Initially, the work will seem less but with time the amount of work only increases and becomes more interesting and involving. Managers often check on you once in a while and obtain feedback regarding the kind of work you want to involve yourself in, in the future.

Academic courses relevant to the project: Object Oriented Programming, Data Structures and Algorithms, Operating Systems, Database Systems.

Name: Snehal Rajesh Wadhvani (2014A7PS0430H)

Student Write-up

Short Summary of work done during PS-II: Nutanix Technologies Pvt. Ltd. Is launching its Xi Cloud Services into the market soon, and these services would be offered through a web platform wherein Nutanix Customers can choose a plan for the cloud services. This platform would also take care of the billing and payment for the services that the customers use. My work concerns with development tasks for this platform. Apart from the Billing & Onboarding of Xi, I have also worked on a few tasks on a platform called Gatekeeper which offers a Single Sign On point for all Nutanix Apps.

Tools used (Development tools - H/w, S/w): Nodejs, Sailsjs, Reactjs, Postman, Git, HTML/CSS

Objectives of the project: Since the work centered around a customer facing web platform for an upcoming Nutanix service, the major objective of this project was development of features for the concerned platform, testing the platform on production to check for robustness and overall fine tuning of the platform to make it production ready.

Major Learning Outcomes: I got to work with the latest web development technologies and also got to learn how an industry grade web platform is created and maintained. I also got an insight into all the architectural and security concerns of a billing platform which has the potential to directly effect the revenue of the company. This also gave a hands on experience of how a project with multiple contributors across the globe is done and how co-ordination with offshore teams is maintained. It gave me a first-hand experience of the Agile methodology of software development and how the software development cycle functions.

Brief Description of working environment, expectations from the company: Nutanix is a fast growing company and there is always fresh and exciting work going on in almost all the teams. It has a great work environment with frequent collaboration with offshore teams as well. The company always expects the interns (or college graduates) to give a fresh and unbiased perspective regarding software development and new ideas are always welcome. The work life balance can seem to tip towards the unfavorable side at times, but it is always team dependent.

Academic courses relevant to the project: C Programming, Data Structures and Algorithms, Object Oriented Programming, Database Management Systems, Design and Analysis of Algorithms, Computer Networks, Software Engineering

Name: Anirudh Kumar Bansal (2014A7PS0081P)

Student Write-up

Short Summary of work done during PS-II: I joined as an intern at Nutanix on 2nd Jan 2018 as a member of technical staff for the stargate team - which manages the stargate component of the Nutanix operating system that deals with I/O operations. I wrote unit tests for the sharing modes feature of SMB (Server Message Block a network protocol mainly used for providing shared access to resources like files and printers between nodes on a network) adapter. As these unit tests ran successfully, the implementation of the SMB adapter and its sharing modes feature was validated. I also worked briefly

on the differences between NFS 3 and NFS 4.1 protocol and in particular the way in which the ESX hypervisor uses these two versions of the NFS protocol during powering on/off a VM or when creating/removing snapshots. The main aim of this project was to see if a feature called session trunking in NFS 4.1, by which a server can expose multiple IP addresses to a client, can be useful for stargate. I also wrote some unit tests related to Hyper-Vs delete on close feature (i.e only if all opens to a file are closed, the file is allowed to be deleted). My major work during my internship here has been writing unit tests for various SMB related features.

Tools used (Development tools - H/w, S/w): I was provided with a Mac for development purposes. No other special hardware was required. The main software tools I used were git and gerrit for code review as well as other proprietary tools provided by Nutanix itself for code verification, managing cluster resources, keeping track of the status of the work being assigned to me etc. I used C++ and Python to code along with suitable IDEs - vim for C++ and PyCharm for Python.

Objectives of the project: My major project involved writing unit tests for various SMB related features. The objective was to validate the existing SMB implementation along with the new features introduced in it like sharing mode checks.

Major Learning Outcomes: Use of software tools like git, gerrit and other proprietary Nutanix tools. Some basic understanding of SMB protocol and the features being added to it. Some basic understanding of NFS protocol. Learning good coding practices and writing industrial quality code. Debugging code by printing log messages and examining log files.

Brief Description of working environment, expectations from the company: Nutanix is a young but fast growing company and has a very dynamic and professional working environment. The learning curve is steep but people are helpful in every way. Interacting with the knowledgeable employees helped me out whenever I was stuck on any issue. There are team outings to encourage interaction between the members of the team. I think one of the key learning's from my internship experience has been understanding how to write professional, industrial-quality code. This PS-2 experience has been humbling and rewarding. I am grateful to the support and guidance from my mentors in the team.

Academic courses relevant to the project: Operating systems, Computer architecture, Data structures and algorithms.

Name: Karen Quadros (2014A7PS0001G)

Student Write-up

Short Summary of work done during PS-II: Bug fixes, introduction of new Nutanix and Non-Nutanix models, refactoring of code, discovering bugs, various miscellaneous feature development on ModelNParts and SIZER project.

Tools used (Development tools - H/w, S/w): S/W: Java, Spring and Hibernate framework, MySQL, Json, Sequel Pro, IntelliJ IDEA CE,

Objectives of the project: The SIZER team is responsible for developing, maintaining, debugging and introducing new features and models to a web application, called the Sizer web applications. This web application is used by the sales personnel and potential customers to generate an optimized bill of materials and quotation in terms of cost based on their workload, capacity requirements and available resources. The application takes cluster and resource requirements and provides a solution that is optimized for Total Cost of Ownership (TOC).

Major Learning Outcomes: Coding and Debugging in Java and MySQL. Learnt about the Spring Framework and Hibernate Learning good coding practices and writing industrial quality code.

Debugging code by printing log messages and examining log files.

Brief Description of working environment, expectations from the company: Amazing team called SIZER. Composed of 14 members belonging to Back-End, User-Interface and Quality-Assurance, led by our Manager Ankur Gupta. Through the various tickets assigned to me, (more than 30 ever since I joined Nutanix on January 2, 2018) I have become very familiar with the workflow of the ModelNParts project. I learnt about new libraries such as the Java Jackson library for manipulating json documents, or the Java Spring Framework for easy web application creation and deployment. In my quest for solving the problems presented to me, I have become comfortable with Java as well (I was comfortable coding in python and C++ before joining Nutanix).

Academic courses relevant to the project: Object Oriented Programming, Database Management Systems

Name: Monica Adusumilli (2014A7PS0005H)

Student Write-up

Short Summary of work done during PS-II: I worked on a project called foundation central which enables nutanix customers to deploy their clusters in a zero touch manner. For this, I had to learn go language and how microservices used dockerized containers are built. I also had to learn more about DHCP to program the servers. It was a great learning experience working on an end to end project which helped me learn the project lifecycle. It was a great learning experience working with experienced engineers in the fields of networking. Nutanix is a great place to learn and work, especially if we are interested in the core areas of computer science like networking and operating systems.

Tools used (Development tools - H/w, S/w): Python, API development, Golang, Docker, Kubernetes, Cluster Architecture

Objectives of the project: The project mainly focuses on zero touch deployment of Nutanix clusters at remote sites using existing Prism Central and Foundation and developing new services and APIs.

Major Learning Outcomes: This project helped me learn various languages like Golang and service architectures like docker containers and Kubernetes. I was also able to learn how to design and implement REST APIs for the project. Moreover, the key learnings included understanding the project lifecycle and developing products and services end to end.

Brief Description of working environment, expectations from the company: Nutanix has a very vibrant work environment with friendly people who almost always try to embrace the core values of Nutanix, hungry, humble and honest. The company expects interns to give their best to the projects they are working on and a wide range of projects are given to interns, from full stack web development to development of core data path and apis of Nutanix. The work timings are flexible and you won't have to sit for office for very long hours as long as you complete your expected goals or abide by the sprint deadlines. Nutanix doesn't differentiate much between their employees and interns, so you'll have a first hand experience of how things work in a software company. There is a frequent all hands session in the company, where the senior leadership explains the company's results, it's future goals which will help you realise the bigger picture.

Academic courses relevant to the project: Computer Networks was very helpful to me as I had to work on networking issues related to DHCP. Operating systems was a very helpful course because I had work

related to systems programming. Work at nutanix mostly focuses on the core areas of computer science, while you'll be expected to learn new languages like go if your team needs.

PS-II Station: PAYPAL, Bangalore

Student

Name: Ayush Sharma (2014A7PS0039H)

Student Write-up

Short Summary of work done during PS-II: The project was in merchant insights team and was to provide a new set of insights to paypal merchants and it was build end to end by us

Tools used (Development tools - H/w, S/w): HIVE, SPARK, REACT, JS, NODE.

Objectives of the project: PROVIDE CUTOMER INSIGHTS

Major Learning Outcomes: Big data, Full stack

Brief Description of working environment, expectations from the company: The working environment was very relaxed and supportive and accommodating

Academic courses relevant to the project: JAVA

Name: Jainam Shah (2014A7PS0023G)

Student Write-up

Short Summary of work done during PS-II: The project involves data retrieval from the data store and display it in a visual format which will reduce the debugging time of the engineers. We have written a backend service in NodeJS and a frontend service in Dust and used Couchbase as a caching system for our project.

Tools used (Development tools - H/w, S/w): Node.js, Dust, Couchbase, Javascript

Objectives of the project: The project's aim is to build a tool is to reduce triage time and ease the process of debugging and bug allocation. The end tool will also help the user visualize the entire flow of the transaction for a given ID/ Token. It will extract data from multiple data sources i.e. Big Data Store, SQL Database Store and present it in a consolidated format.

Major Learning Outcomes: NoSQL Databases, Code Design, Code Reusability, Modularity

Brief Description of working environment, expectations from the company: The working environment is free and pretty good. There is no discrimination between the full time employees and interns. The team members are always ready to help when stuck somewhere. The office area is good and there is a breakout area with TT, foosball, xbox and some food where you can chill anytime.

Academic courses relevant to the project: Object Oriented Programming, Database Systems, Principles of Programming languages.

Name: Karthik Menon (2013B3A70487H)

Student Write-up

Short Summary of work done during PS-II: I was part of the PayPal Mobile App(Venice) team at Bangalore. Initial few months were spent on development of small features in the PayPal Android application. The later part of which was spent on a Proof-Of-Concept, which involved figuring out a new way of recreating the mobile experience with an emphasis on the keeping the application light-weight and generating pure-native experience. So instead of having a single monolithic app which is very hefty, enable the user to download only those components of the application which are actually gonna be used by him/her. This gives the ability to the user to cherry pick only those features that he/she would use to reside on his device. Also the developer can updates individual features of the application without having to go through the AppStore review process, with this modularized approach each team can independently work on their own features and can have independent dev/maintenance cycles. This was a hybrid-mobile app approach and I majorly used react-native to achieve the same. Apart from this I had also participated in a month-long Raspberry-Pi Hackathon for which my team secured the 2nd place.

Tools used (Development tools - H/w, S/w): Android Studio, React-Native, React , Node

Objectives of the project: Re-invent the way the mobile applications are run/managed with an emphasis on keeping the application and light-weight as well as have independent dev/maintenance cycles for teams working on independent features

Major Learning Outcomes: Leadership, Professional ethics, Software Dev, Collaboration

Brief Description of working environment, expectations from the company: The work environment in PayPal is very open and chilled-out. People within your team and across different teams are more than

happy to help you out. The senior management encourages you to think out-of-the-box and conducts numerous hackathons and events to stimulate the same. Within this brief period of 5 months I had the opportunity to present my work and interact with various senior level personnel including the CTO of PayPal which was a true privilege.

Academic courses relevant to the project: Software Development , Operating systems.

Name: Arjav Nag (2013B5A70664P)

Student Write-up

Short Summary of work done during PS-II: It involved the development of node web application modules, services that will be called downstream to support added features and functionality in a live PayPal product as per new specifications.

Tools used (Development tools - H/w, S/w): Node.js, jQuery, Sinon, Mocha, Java

Objectives of the project: Aims at including additional features and functionalities in the live product as per certain new specifications as well as to maintain conformity with other products and services.

Major Learning Outcomes: Enhanced technical skills in web development, Java, Spring

Brief Description of working environment, expectations from the company: Flexible and friendly working environment without any stress. The onus to get more work is on the intern. The type of work also depends on the team that one is allotted.

Academic courses relevant to the project: DSA, OOP

Name: Harshit Agarwal (2014A7PS0004H)

Student Write-up

Short Summary of work done during PS-II: Created an Admin tool for the team which includes frontend in reactjs, nodejs, and backend API to communicate with DB written in Java using Jaxrs.

Tools used (Development tools - H/w, S/w): Reactjs, nodejs, Java, IntelliJ

Objectives of the project: Create an admin tool to remove direct dependency on team

Major Learning Outcomes: Web development

Brief Description of working environment, expectations from the company: A very good work environment, open office, focus on your learning, friendly, approachable and helpful seniors, supports new ways of solving problems, accepts new technologies, good PPO chances

Academic courses relevant to the project: OOP

Name: G V Sandeep (2014A7PS0106H)

Student Write-up

Short Summary of work done during PS-II: I was told to build a tool for the Billing Team. The aim was to extract my team specific information from various data sources and display them in a manner which will reduce the teams effort in finding errors and fixing them. We were supposed to extract data from CAL (Centralised Application Logging), Teradata and LiveDBs. I wrote asynchronous functions which extracted data from the sources and sent in out in a format which was expected by the module responsible for visualisation.

Tools used (Development tools - H/w, S/w): Node.js, React.js, Celery, Python, Javascript, Couchbase

Objectives of the project: To reduce the debugging and triage time of the team. Also, to generate more visually appealing representation of data.

Major Learning Outcomes: Design Skills: I have learned the importance of good code design. I have learned to code in a way that allows flexibility. I now always keep it in the back of my mind that there would be new features added to it later. Technical Skills: I have learned new technologies like Node JS, Couchbase, Celery and Teradata. Non technical Skills: Interpersonal skills, email etiquette, presenting my work better.

Brief Description of working environment, expectations from the company: The culture at PayPal is great. Everyone here understands that it's a new and intimidating experience for you and helps you accordingly. People are helpful and talk on first name basis. The culture is pretty casual and cheerful.

Academic courses relevant to the project: Data Structures and Algorithms, Computer Programming.

Name: Abhimanyu Singh Shekhawat (2014A7PS0030G)

Student Write-up

Short Summary of work done during PS-II: I worked on 3 separate projects during the course of my internship. Fortunately all the three areas were mutually disjoint and completely new to me, hence maximizing my learning experience. Below is the account of all the project I was engaged in: 1. Kraken based Node Web Application to manage reward programs. This project required good and sound understanding of modern web technologies used by PayPal. It will be used as an internal tool that will enable people to create and check the status of reward campaigns in an easier and efficient way. 2. Smart PayPal taxi companion using Raspberry Pi. This was month-long hackathon project. It required an advanced understanding of Raspberry Pi and the popular hardware modules like camera, microphone, GPS sensor, RFID reader etc. The project is completely open source with detailed documentation. It aims at augmenting the taxies with smart features that can easily log the entry of passengers and provide them smart facilities like new updates etc. 3. Mocking the MFS response for the Venice iOS application. The aim of the project is to mock the MFS response for the activity summary and activity details page. It will help the developers to test the application flow without hitting the central MFS service repeatedly. This project requires a good understanding of iOS application architecture.

Tools used (Development tools - H/w, S/w): Raspberry Pi, Python, NodeJs, Javascript, Hardware Programming, iOS application Development, Android Application Development, Swift.

Objectives of the project: Two of the projects were aimed at developing internal tools for the smooth functioning of the workflow. However the Raspberry Pi project was really interesting but it was done as a part of a month long Hackathon.

Major Learning Outcomes: Professional skills: Raspberry Pi programming, Python, Version Controlling tools (Git) , NodeJs, Javascript, Dust, Android Development, Swift, Best Practices for Software Development. Soft skills: Team work, Time management, Effective Communication.

Brief Description of working environment, expectations from the company: PayPal is a friendly place to work with decent amount of perks given to the employees. The work timings are pretty much flexible but it depends on your team as well. Similarly the workload will also vary according to your team. In a nutshell, this is a comfortable place to work in and the tech stack spans across (but not limited to) NodeJS, Android and iOS. But I haven't seen any really creative work being given to any intern.

Academic courses relevant to the project: Basic software development skills will prove an asset although not a strict dependency.

Name: Kirti Singh Rathore (2016H1030070P)

Student Write-up

Short Summary of work done during PS-II: Developed an automated testing framework, using Service Virtualization, which can be used by any component (a part of the application, which can function independently), to perform automated testing of their component, without the need to rely on any other components, which it has to communicate with. The successful completion and deployment of this project to the project ECD pipeline will ensure overall reduction in Time-to-market of the product, along with reduction in mean time to repair (MTTR). Worked on a complete project, both front and back end.

Tools used (Development tools - H/w, S/w): Java, Javascript, Spring boot, CSS, HTML

Objectives of the project: Reducing time-to-market/ MTTR of the system, in order to reduce costs incurred by the company, and ensure customer satisfaction. More specifically, To detect and resolve bugs at an earlier phase of the project life-cycle.

Major Learning Outcomes: Industry coding standards, Java8, Service Virtualization, Industry processes, Maven. Jenkins

Brief Description of working environment, expectations from the company: The work culture of the company is really great. It takes care of its employees properly.

Academic courses relevant to the project: Java

Name: VENKATA MANIKANTA SAI TARUN maddali (2014A7PS0146H)

Student Write-up

Short Summary of work done during PS-II: I belong to the ACE team, Payments department. ACE stands for Authorization and Capture Engine. My team majorly decides to which direction the transaction has

to be routed. It is majorly between two choices, either a payment processor or a settlement. Whenever a customer buys a product from the merchant, the merchant requests the validation of the instrument used by the customer. In the cases where the validation of the instrument is required, the transaction goes to the payment processor. In cases where validation of the instrument is not required like a refund of funds, the transaction is routed to settlement team. We have a set of rules to decide which payment processor it has to be routed, taking the nature of the transaction into consideration. Whenever a transaction fails, the developers in my team debug the issue. There are three levels of debugging an issue. The first level is they see the CAL log, the second is the looking through playback data, the third approach is to run the transaction again on their local machine to see the detailed information of the transaction. My project is to automate the process of running the transaction on the machine with just one-click. If you give the correlation-id as input which is unique to every transaction, it shows all the information. This tool will be used on daily basis and saves a lot of time for the developers in debugging an issue. With this kind of information available, developers can resolve 90% of the issues that they get.

Tools used (Development tools - H/w, S/w): Java, Spring, Maven, HTML, CSS, JAVASCRIPT, REST API.

Objectives of the project: My project is to build a Java Tool that will be used by my team to debug an issue.

Major Learning Outcomes: After the project I am able to debug an error easily. I have got an in-depth knowledge of maven, spring, logback modules. I have got experience with JAVA, HTML, CSS, JAVASCRIPT, REST API.

Brief Description of working environment, expectations from the company: The work environment in PayPal is very good. The office timings are flexible. They only have the targets for the sprint(usually 15 days). The management sees the work not the time you had worked. There will be events happening at least once a month, where you can participate to get memorable moments and a very good chance to meet new people with similar interests. The people here are very friendly. It is a great place to work and have fun simultaneously.

Academic courses relevant to the project: Object Oriented Programming, Database Management System.

PS-II Station: PAYPAL, Chennai

Student

Name: Nishant Bansal (2014A7PS0052P)

Student Write-up

Short Summary of work done during PS-II: Design and develop Hercules, a metrics cum Change Review Board facilitator tool. It aids developers by simplifying the process of raising a request for pushing their code changes to the production environment. It also integrates validations from GitHub, Jenkins and SonarQube to verify the integrity and sanity of their code. Hercules also caters to the needs of Change Review Board by providing an easy to use approval dashboard and provide a bird's eye view of various metrics related to the code. The Change Review Board can easily approve or reject requests directly from the emails sent to them via Hercules tool as a pdf attachment includes all the necessary information about the request.

Tools used (Development tools - H/w, S/w): Java

Objectives of the project: simplifying the process of raising a request

Major Learning Outcomes: Java, AGILE

Brief Description of working environment, expectations from the company: Very good

Name: RAJAT JAIN (2014A7PS0122H)

Student Write-up

Short Summary of work done during PS-II: I worked in core team of PayPal which handles data of transactions done on PayPal. My work was mostly on the domain and I also did small project on django.

Tools used (Development tools - H/w, S/w): Django, Spring, Java

Objectives of the project: I had to develop code for the my team's domain. I also worked on making tools to help other developers.

Major Learning Outcomes: I learned a lot about code standards and team building. Networking events helped me improve my communication.

Brief Description of working environment, expectations from the company: PayPal Chennai being the headquarter for India has wide array of work. Also it has a good work life balance. And work culture promotes collaboration and innovation.

Academic courses relevant to the project: OOPS, DSA

Name: AKSHAY R (2013B3A70543P)

Student Write-up

Short Summary of work done during PS-II: I was tasked with designing a platform for elastic search that involved a query builder to help build elastic search queries and then a drag and drop UI builder to create charts and other visualizations.

Tools used (Development tools - H/w, S/w): React JS, Node JS, Javascript

Objectives of the project: To create a full-fledged ElasticSearch Query Builder and Dashboard

Major Learning Outcomes: I learnt about how to write industry level code. I had to learn a plethora of technologies from CSS, javascript, React JS, Node JS and Elastic Search.

Brief Description of working environment, expectations from the company: The working environment is incredible. There's a right balance of work and play. There are frequent fun events that keep happening. PayPal also has an impeccable work culture that really dictates and shapes how the people work. The company is all about the people and values them greatly. People are extremely friendly and easily approachable.

Academic courses relevant to the project: Data Structures and Algorithms, Object Oriented Programming.

Name: Bhawna Bhardwaj (2015H3130073H)

Student Write-up

Short Summary of work done during PS-II: 1) Using Spark to find the top most contributing fields of transactions, which are causing the declines. 2) Benchmarking the simulator 3) POC of Hyperledger Blockchain(Fabric)

Tools used (Development tools - H/w, S/w): Eclipse, Spring Tool Suite

Major Learning Outcomes: Got to work on new frameworks, tools & platforms : Spark, Kafka, Jmeter, PTaaS, Jenkins, Altus, STS, Postman, Fabric, docker

Brief Description of working environment, expectations from the company: Team members are very helpful. There is not much pressure, so you can work and learn at your pace.

Academic courses relevant to the project: Data Structures and Algorithms

Name: Aman Gupta (2014A7PS0059H)

Student Write-up

Short Summary of work done during PS-II: The first assignment was masking sensitive data in the logs, which I did using Eclipse as an IDE for development. Second one was to create a search engine as a web application which can get the URL along with the information of the IDE entered so that it becomes easier for developers to get Jenkins build, Rally user story, JIRA ticket, Cal ID, etc.

Tools used (Development tools - H/w, S/w): Node JS, JAVA, React JS

Objectives of the project: To understand corporate world and corporate coding

Major Learning Outcomes: Got to learn full fledged web development and create a search engine, got to work on security, learning more and more about payments.

Brief Description of working environment, expectations from the company: The working environment in the company is great. People are supportive and there is no hierarchy in engineers, so everyone is easily approachable.

Academic courses relevant to the project: Object oriented programming, Web development.

Name: Sakshi Sharma (2014A7PS0076G)

Student Write-up

Short Summary of work done during PS-II: Created ZoomData and Tableau Dashboards for visualizing and monitoring data. Analyzed the features of PayPal with its competitors and its impact. Identified risky sellers and took appropriate actions avoiding/ reducing loss. Identified various dependencies of rules that fire on each transaction and how they can be changed. Helped in migration and sunset of some seller fund access properties.

Tools used (Development tools - H/w, S/w): TeraData, Tableau, ZoomData, KnowledgeSeeker, Excel

Objectives of the project: Automating data summarization ,visualization and monitoring, Market Research, Loss Mitigation and Reduction, Identification of dependencies of rules,Migration and sunset of Fund's Availability Instruments

Major Learning Outcomes: Data/Business Analytics and visualization

Brief Description of working environment, expectations from the company: PayPal ensures great work-life balance. Managers and mentor are very friendly and supportive. It's easy for employees to switch teams and domains.

Academic courses relevant to the project: Database Systems.

Name: Pavan Yanamadala (2014A7PS0156H)

Student Write-up

Short Summary of work done during PS-II: Develop a tool for testing

Tools used (Development tools - H/w, S/w): Java spring, Javascript

Objectives of the project: How testing is done at industry level

Major Learning Outcomes: How testing is done at industry level

Brief Description of working environment, expectations from the company: The company was very good. The staff clarified all the doubts how small they may be.

Academic courses relevant to the project: Java

Name: Anuroop Gireesan (2013B5A70653H)

Student Write-up

Short Summary of work done during PS-II: Was working on the front end of my teams application

Tools used (Development tools - H/w, S/w): Node js.

Objectives of the project: To improve user experience of customers of paypal

Major Learning Outcomes: Learnt about various technologies like node etc....

Brief Description of working environment, expectations from the company: Work environment was great . team/manager were very supportive.

Name: SAGAR SUMAN (2014A7PS0856H)

Student Write-up

Short Summary of work done during PS-II: I worked on 2 projects during the course of my journey in PayPal. 1st one was a standalone project based on node js. I had to web-scrap data from multiple sites at a time and display them at one place. So, basically to save people's time from going on to various sites ,I had to build an automation tool for them. I first worked with python to get the required data and converted it into json format and later through node js passed it to the front end where I used charting libraries like Treant and jsplumb to display it in a tree structure. The websites I worked on are moneyadmin.msmaster, moneyadmin-vip-b.slc and io/ which are internal to Paypal and help in analyzing the transactions happening through PayPal. I completed the project as per their requirements and deployed it on the GCP server. People within PayPal can use it using a domain name with which I registered. My 2nd project was containing a bigger motive for helping out the live-ops team who monitor the health of PayPal's major pillars like fulfillment, ace, settlement etc. We created a web application using react js which had the ability to show the historical health details of PayPal. Previously, they had to get all such information from iris dashboard which has the ability to show recent alerts. We started pulling information from iris and stored it in our local database so that we can show historical

data for the past 1 month. Also, we are displaying the alerts in donut view, tabular view as well as the heatmap view so that the concerned team can easily connect through the alerts.

Tools used (Development tools - H/w, S/w): 1st project- Node js, Python, Web scrapping (using beautiful soup 4), Charting libraries like treant js and jsplumb., JQuery and javascript. 2nd project- React js along with redux, Working with couchbase server. Build and deployment in the altus environment. Semantic-ui. Worked on the backend side using java.

Objectives of the project: To help out the live-ops team who monitor the health of PayPal's major pillars like fulfillment, ace, settlement etc.

Major Learning Outcomes: Time management.

Brief Description of working environment, expectations from the company: I feel myself lucky to have started my career with such a reputed company as Paypal. I got an opportunity to work with some of the great minds of our country and in the process I could learn a lot of new stuffs. The working environment which we get at Paypal is really awesome. Over and all, last 5 months were the best of my life where I literally enjoyed the work.

Name: BESTHA RANGA NAGA BHARATH (2014A7PS0140H)

Student Write-up

Short Summary of work done during PS-II: 1)Built a full stack application for internal purposes of PayPal. 2) The learning includes React js for the frontend development. 3) Node js for middle tier development. 4)Mongo Database, Couchbase database for backend development.

Tools used (Development tools - H/w, S/w): React js, Java spring,Mongo and couchbase databases

Objectives of the project: The objective of the project is to develop a web application that can be used by the PayPal employees and it mostly automates the detection of alerts. The scope also includes to include a feature called data correction which makes the application purpose complete.

Major Learning Outcomes: An overview of full stack development and good communication skills

Brief Description of working environment, expectations from the company: The work environment is fairly good. I like the flat hierarchy of PayPal. The expectation from the company is to meet the deadlines of the project strictly.

PS-II Station: Petasense - Embedded Software, Bangalore

Student

Name: Ayush Sharma (2014A7PS0039H)

Student Write-up

Short Summary of work done during PS-II: Developing webapp for petasense in react framework. End to end development for migrating from angular to react. Designs are available and we need to match according to the spec. APIs needed are also configured and developed by me. The webapp shows the analysis and information of his machines and plant health. The information is received from sensors and analyzed using Machine Learning algorithms by server. Webapp shows this information to the user. The webapp needs to be interactive and pixel to pixel perfection is needed since it is customer facing feature.

Tools used (Development tools - H/w, S/w): Software tools used: Flask (python backend framework), Angular JS (Javascript based Frontend framework), React JS (Javascript based Frontend framework), Kubernetes, EFK stack (Elasticsearch Fluentd Kibana)

Objectives of the project: Developing webapp for petasense in react framework

Major Learning Outcomes: Maintain code quality, Handling code review system, Using highly sophisticated developing frameworks, Communication ethics within a company

Brief Description of working environment, expectations from the company: Work culture in company is awesome. Top notch work ethics and at the same time rich startup culture. Company offers qualitative work and expects similar dedication from the interns. Work is fun but for qualitative learning one requires to put effort from own side.

Academic courses relevant to the project: Object oriented programming, Data structures and algorithms (minor requirement)

PS-II Station: Petasense - Machine Learning, Bangalore

Student

Name: Prateek Jain (2014A7PS0047P)

Student Write-up

Short Summary of work done during PS-II: Full stack web development and integration of Petasense's backend with OSISOFT Pi system and GE Predix.

Tools used (Development tools - H/w, S/w): Frontend: D3, JS, Angular, Backend: Python, Flask, SQLAlchemy, JWT, Celery, RabbitMQ. External System: Osisoft Pi System, Predix Timeseries, Predix UAA.

Objectives of the project: Web Development

Major Learning Outcomes: Frontend: D3, JS, Angular, Backend: Python, Flask, SQLAlchemy, JWT, Celery, RabbitMQ. External System: Osisoft Pi System, Predix Timeseries, Predix UAA.

Brief Description of working environment, expectations from the company: The team involves highly qualified and passionate employees. The expectations are to be involved in various projects within the company and deliver production quality code.

Academic courses relevant to the project: Object Oriented Programming, Database.

Name: Yash Bansal (2014A7PS0119H)

Student Write-up

Short Summary of work done during PS-II: The Battery anomaly detection and Life prediction are two major products for Petasense for their cost cutting. During the process I learnt about various new tools such as flask, sqlalchemy, AngularJS and many other libraries. This project helped me gain a hands on experience of my Machine Learning and AI skills. I have developed some very intuitive models and learnt to apply them into the real world. Apart from the technological stack, I learnt values too including team work, persistence and work life balance. This internship boosted me to learn deep learning and special kinds of neural nets which I was planning to learn earlier but couldn't do because of resources.

Tools used (Development tools - H/w, S/w): Flask, AngularJS, Python, PostgreSQL, SQL alchemy, celery, Mysql, virtualenv

Objectives of the project: Using the past logs, the objective is to come up with a model to predict the remaining battery utility time i.e. RUL.

Major Learning Outcomes: During the process I learnt about various new tools such as flask, sqlalchemy, AngularJS and many other libraries. This project helped me gain a hands on experience of my Machine Learning and AI skills. I have developed some very intuitive models and learnt to apply them into the real world. This internship boosted me to learn deep learning and special kinds of neural nets which I was planning to learn earlier but couldn't do because of resources.

Brief Description of working environment, expectations from the company: The work environment here is thriving. People are very competitive and want to be their best. If you do not like the work, you can ask the authority and change your project but you should never stop learning. Company expects you to provide the deliverable on time because it is a startup. But, said this so, People are very helpful and cheerful. There is never a tense environment in the company. There are also Friday night parties.

Academic courses relevant to the project: ML, AI, Object Oriented Programming, DSA, Database Systems, Data Mining

PS-II Station: Petasense - Services & App Development, Bangalore

Student

Name: Ayush Agarwal (2014A7PS0083G)

Student Write-up

Short Summary of work done during PS-II: Worked on customer facing tasks like FTP service for data upload to a specific location and different features requested by the customers. Also worked extensively on the Operating site of Petasense to develop features required by the customer success team to fulfill their tasks.

Tools used (Development tools - H/w, S/w): Flask, AngularJS, HTML, CSS, RabbitMQ, Celery, PostGresSQL, BitBucket

Objectives of the project: To develop customer facing features as well as to develop features for the customer success team.

Major Learning Outcomes: Technologies like Flask, AngularJS, HTML, CSS, RabbitMQ, Celery, PostGresSQL, Bitbucket. Learned to work as a team and complete tasks.

Brief Description of working environment, expectations from the company: The working environment is quite fun. Being a startup and having a very small team it was easy to communicate with everyone. The work culture is dynamic and you could be assigned a new task at any given time depending in. the criticality of the issue.

Academic courses relevant to the project: DSA, DBMS, Computer Networks, ML

PS-II Station: Postman, Bangalore

Student

Name: Naresh Peshwe (2013B4A70904G)

Student Write-up

Short Summary of work done during PS-II: Feature development, Unit testing and End to end testing for the Postman app.

Tools used (Development tools - H/w, S/w): Electron, React, MobX and other JS testing frameworks

Objectives of the project: Redesign and implement the tabs functionality in the Postman app. E2E testing pipeline for the app and improving coverage for the Postman app code base.

Major Learning Outcomes: Javascript, design principles, React, MobX, Mocha and how to write effective tests.

Brief Description of working environment, expectations from the company: Start up culture. Things move at high pace. Follow principles of agile development. Friendly and highly knowledgeable coworkers.

Academic courses relevant to the project: DSA, DAA, DBMS, Computer networks and graphs and networks.

Name: Aashray Bhandari (2013B2A30864G)

Student Write-up

Short Summary of work done during PS-II: Influencer Analysis - As part of the data science team our goal was to enable other teams to target potential customers. We used Neo4J to identify naturally occurring collaborating clusters in the free user base and machine learning to predict influences in these free clusters. Churn Prediction- used machine learning tools to assign a probability of which teams were likely to churn in the coming month.

Tools used (Development tools - H/w, S/w): MySQL, Sci kit-learn, python

Objectives of the project: Identify free influences and probability of a team to churn

Major Learning Outcomes: Learnt how to use machine learning at scale for enterprise and got exposure on how to use graph databases.

Brief Description of working environment, expectations from the company: Very relaxed working environment with a lot of support from the team to explore your interests and excel at it.

Academic courses relevant to the project: Database, basic computer programming.

PS-II Station: Qubole, Bangalore

Student

Name: Snehal Gite (2016H1230023G)

Student Write-up

Short Summary of work done during PS-II: Learnt Static timing analysis concepts and scripting languages like perl, python and tcl, analysis of timing reports, learnt qualcomm specific tool and flow for static analysis, wrote automation scripts in Perl and Tcl, Learnt about ECO flow, generation of ECO scripts on few designs, Learnt about methods to solve different types of violations, Spice correlation for standard cells, Generation of spice waveform for debug purpose in case of failed correlation between Primetime/Tempus and spice.

Tools used (Development tools - H/w, S/w): Primetime, Tempus

Objectives of the project: Static timing analysis of the designs

Major Learning Outcomes: Perl, Tcl, Python, STA concepts, Spice Correlation concepts

Brief Description of working environment, expectations from the company: Working environment is professional. Company expects us to understand the flow/tools followed in Qualcomm and work with that. You get support from your team. It is a great place to learn.

Academic courses relevant to the project: Advanced VLSI design, CAD for IC design

Name: Hara Teja Yallavajhala (2014A7PS0012H)

Student Write-up

Short Summary of work done during PS-II: Build a tool to Index Logs generated by Big Data clusters and Retrieve content from them given a specific time range.

Tools used (Development tools - H/w, S/w): IntelliJ, PyCharm, Maven, Java

Objectives of the project: To make a LogFetch Tool

Major Learning Outcomes: Learnt about Big Data clusters and how they work. Got to learn a lot about coding style and code optimizations

Brief Description of working environment, expectations from the company: A company full of very friendly people willing to help each other's out. Company expects you to interact with people and learn apart from contributing to the company.

Academic courses relevant to the project: Object Oriented Programming, Discrete Structures, Operating Systems, Database Management Systems, Computer Networks

Name: Chintan Betrabet (2014A7PS0044G)

Student Write-up

Short Summary of work done during PS-II: During the course of Practice School my task was to build a Kubernetes environment to run QDS (Qubole Data Services) for AWS and Azure. I further played a part in integrating different modules of QDS and different tiers of the software into Kubernetes by containerizing them (using Docker images instead of full software setup). I needed to work on Ruby on Rails to modify some of the application code to allow it to run in the containerized environment. I also worked temporarily on a performance enhancement project to identify methods to improve log file upload speeds for which I used Java based tools and shell scripting.

Tools used (Development tools - H/w, S/w): Docker, Kubernetes, Ruby on Rails, Java, Shell scripting

Objectives of the project: Build a Kubernetes based environment to run Qubole Data Services

Major Learning Outcomes: Containerization process, setting up and managing big data clusters, command flow in Qubole across multiple tiers, performance analysis process, large scale deployment and release versioning of software.

Brief Description of working environment, expectations from the company: Qubole has a very open culture with no cabins for even the CEO and senior employees. It establishes a level of equality among employees and enables bonding among co-workers. While all employees are busy working on their assigned tasks, they are willing to take out time to resolve issues for interns, even if the doubt or issue be extremely basic. It made me feel extremely welcome in the company. Expectations of work and work ethic for interns is no different from those for full time employees. The idea is simple, all employees

(full time, contract or intern) get the same rights and privileges and are expected to deliver the same level of performance and quality.

Academic courses relevant to the project: Computer Programming, Operating Systems, Data Structures and Algorithms

Name: Mayur Bhosale (2013B3A70556G)

Student Write-up

Short Summary of work done during PS-II: I was working with the Spark team. My project was to add support for a distributed write of the results from the executors.

Tools used (Development tools - H/w, S/w): Apache Spark, Scala, Ruby, Java, Python

Objectives of the project: Spark Distributed write of the results

Major Learning Outcomes: Got an understanding of the distributed systems

Brief Description of working environment, expectations from the company: Qubole has a very friendly work environment. Work would be allocated based on how much one is able to digest but, there is no pressure to work finish it off by deadlines, etc.

PS-II Station: Rakuten-Human resources& operations and recruitment, Bangalore

Student

Name: Sampad Chandra (2016H1490246P)

Student Write-up

Short Summary of work done during PS-II: Program management intern: Driving the key performance indicator analysis of Rakuten India. The two main objectives achieved in the internship were: To simplify and structure the issue tracking and preparing report for the same for the top management to review. This was done by tracking issues using Trello, which is an easy to use program management software. To track the various organizational metrics and engage in Human resource analytics for deriving key performance indicators and communicating the same to the top management to aid them in making an informed decision. This was achieved by creating interactive and robust dashboards using advanced excel.

Tools used (Development tools - H/w, S/w): MS Excel; Trello

Objectives of the project: The objective of the project was to: 1. Simplify issue tracking. 2. Engage in key performance indicators analysis and human resource analysis

Major Learning Outcomes: 1. Mastered the art of creating interactive dashboards using MS Excel. 2. Learned Trello, a program management software. 3. Learned about the various metrics used for tracking the health of a tech organization.

Brief Description of working environment, expectations from the company: Working environment was wonderful. Everyone was very cooperative and helped me out whenever I wanted help. The expectations of the company was made clear on day one and it was in-line with the job description previously provided by the company in PS-II portal. Overall it was a great learning experience for me.

Academic courses relevant to the project: Project management, Quantitative analytics and Managerial communication

Name: Ritika Mehta (2016H1490200P)

Student Write-up

Short Summary of work done during PS-II: Project: Recruitments through Internal Referrals and External Portals at Rakuten India Enterprise Pvt Ltd. Study the existing Internal Referral Program. Determine the goal that needs to be achieved through Internal Referral Program. Create an exceptionally user-friendly process for referring. Educating the employees that what the company is looking for and how to use the Internal Referral Program. Screening Resumes, Scheduling Interviews and making offers to the candidates. Keeping the employees informed about the status of their referrals. Employee Recognition for referring through Referral Bonuses, announcements etc.

Tools used (Development tools - H/w, S/w): Microsoft Excel, Naukri RMS, Taleo

Objectives of the project: Recruitments through Internal Referrals and External Portals at Rakuten India Enterprise Pvt Ltd

Major Learning Outcomes: Recruitment and Selection in a product based company

Brief Description of working environment, expectations from the company: Learn, Fun and Contribute!!! Rakuten Internship is one hell of a learning experience. Its perfect mix of work and fun together!!!! With no prior experience in recruitment there were a lot of things to learn. Always been a candidate but it was interesting to be on other side of the table. It gave me the opportunity to work hands on in a professional environment. The seniors and mentors are always ready and willing to give their advice and guidance. My biggest takeaway would be the new long-term relationships and connections which I have forged with my colleagues and fellow interns.

Academic courses relevant to the project: Human Resource Management, Negotiation Skills, Advanced Excel Training.

Name: Pragya Sharma (2016H1490215P)

Student Write-up

Short Summary of work done during PS-II: Worked on all aspects of recruitment from sourcing to rolling out offers and on boarding. Also, worked on MIS, Dashboards, BGV process, Rolling out increment, bonus letters etc. Covered various aspects of HR.

Tools used (Development tools - H/w, S/w): Naukri Portal, Excel, LinkedIn, Taleo, PeopleWorks

Objectives of the project: Streamlining Recruitment and Helping in Employer Branding for Company to grow in India

Major Learning Outcomes: Learnt end to end recruitment process, HR operations, Employer Branding

Brief Description of working environment, expectations from the company: Learning environment was open and encouraging. Since company is in growth phase there are ample amount of work from scratch and lot of learning available. Everyone in the company is approachable and helpful especially the leadership.

Academic courses relevant to the project: HR, MIS, Branding, Organization Behavior, Management Skills, Negotiation Skills, Legal.

PS-II Station: Report Garden Technologies Pvt. Ltd., Hyderabad

Student

Name: Vivek Chowdary (2014A8PS0231P)

Student Write-up

Short Summary of work done during PS-II: I was tasked with improving the automation test suite which was still at quite a nascent stage in the organisation. I was involved in finding the suitable services/software to reduce the overall runtime of the suite. Primary aim of the project was to mirror the production environment in the automation suite to the maximum extent possible

Tools used (Development tools - H/w, S/w): Ruby, Rails, React, Selenium, Capybara, Travis-CI

Objectives of the project: Develop the Automation Test suite for continuous code checking

Major Learning Outcomes: Gained a strong base in OOP concepts and the Software Development Life Cycles followed in the industry.

Brief Description of working environment, expectations from the company: A great environment to pick up new skills and learn about the up and coming technologies. The people are very friendly all around and the whole work place feels very comfortable.

Academic courses relevant to the project: CP, OOP, DSA.

PS-II Station: Rivigo Services Pvt Ltd, Gurgaon

Student

Name: Madhav Agrawal (2014A8PS0231P)

Student Write-up

Short Summary of work done during PS-II: In the 6 months of internship at Rivigo, I have worked across almost all the spectrum that my team has to offer. I have worked exhaustively on the front end side of various applications the company has built, including creating new UI from scratch as well as implementing new functionalities from the backend. Firstly, the ticketing system that Rivigo has created will play a major role in solving the issue that are raised by their clients in matter of hours and I have played a highly significant role in designing its UI from head to toe. Also, I got the opportunity to work on Android apps where new features were integrated in both scan app and captain app. Zoom-dataportal is also an important platform for maintaining database records of the company and I have resolved many issues that arose in their platform. Moreover, I was also given the task of revamping the company's client feedback mechanism which had both frontend and backend work. This project was also successfully completed on time and deployed on production. I also got introduced to the concept of JUnit which plays an important role in verifying the proper functionality of a function in a program. Maintaining the Junit code coverage is an integral part of the coding which ensures the quality of one's code.

Tools used (Development tools - H/w, S/w): Android, Spring Framework, Junit, ReactJS, Kafka, Java, AngularJS

Objectives of the project: 1. Creating the UI of Rivigo's ticketing System: A good company cannot survive in today's world if it doesn't have a proper structured issue resolving mechanism. Hence, the ticketing system that Rivigo has created will play a major role in solving the issue that are raised by their clients in matter of hours and I have played a highly significant role in designing its UI from head to toe. 2. Revamping the Client Feedback mechanism: It is important that if a client gives a feedback, the company acts upon it swiftly and most importantly it is able to ensure that such mistakes don't reoccur. In order to deal with this problem, I was given the responsibility to create a feedback form for the client (both backend and front end), whose response would then be converted into a ticket with in the ticketing system of Rivigo. 3. Revamping of Captain App: Captain app is the android application of Rivigo which enables their captains to manage their pickups and deliveries hands-on in their smartphones.

Hence it is very important that this application which basically is one of the backbone product of the company works smoothly. Since the old code base of the app became cluttered, it became necessary that the app needs to be revamped with new code base in MVP(model-view-presenter) architecture. I played a significant role in revamping the application.

Major Learning Outcomes: These six months at Rivigo as an intern played a crucial in bridging the gap between the theoretical and conceptual knowledge we get at school, and practical one. It helped me understand the workings and organizational culture and behavior at a startup level only because Rivigo is a new and small firm, where delivering the work punctually is vital. Further, Courses such as Object Oriented Programming, Data Structure and Algorithms, Design and Analysis of Algorithms, and Database Management Systems have been very useful in grasping things easily. In my free time, I am leaving no opportunity to venture into learning new things from sources on Internet and from documentations prepared by developers of Rivigo. This internship has been really exciting and resourceful. I have learnt many things and made some mistakes nevertheless, I believe that I have made the best out of this.

Brief Description of working environment, expectations from the company: Rivigo is a unicorn startup which aims to revolutionise the logistics industry in India via its relay model and high level of technology integration. As the company is still going through the phase of establishing itself, the quality of work that is given even at the intern level is really good as you are exposed to new technologies and concepts. Moreover, the colleagues here are really helpful where they guide if you are not understanding any concept. Apart from this, people here have a lot of freedom in choosing the projects they want to pursue. The company also has clearly defined cultural values which keeps everyone inspired and helps to bring the best out of them. However, the work environment can become quite hectic if one has to meet a strict deadline.

Academic courses relevant to the project: Object Oriented Programming, Data Structures and Algorithms

Name: Deepanshu Nagpal (2013B4A70834P)

Student Write-up

Short Summary of work done during PS-II: Front end development including both mobile apps and web apps. Working on the latest technologies, React and Redux, I built user interface for a meeting feedback mobile application and a customer relationship management system.

Tools used (Development tools - H/w, S/w): S/w: React, React Native, Redux, Spring

Objectives of the project: At Rivigo, I had two major projects. First, to build a cross platform mobile application for meeting feedback. Second, to build a customer relationship management system to automate the task assignment and closure done by customer experience team.

Major Learning Outcomes: Front end development, principles in work life

Brief Description of working environment, expectations from the company: It is a great place to learn and grow. You will be surrounded by a good peer group. It's one of the fastest growing companies in India. So, the pace and scale is great. People have lots of freedom in terms of problems they want to solve, how they want to solve and gets detailed business insights. Transparent communication. Everyone is inspirational in some way or other. Clearly defined cultural values and everyone puts the best foot forward to imbibe them and upgrade themselves.

Academic courses relevant to the project: OOP, DSA

Name: Shashwat Rawat (2013B3A70705P)

Student Write-up

Short Summary of work done during PS-II: At Rivigo, I setup a monitoring and alerting architecture for their services. I used ElasticSearch, Kibana, Prometheus, Grafana etc for generating graphs and alerts based on VM-metrics generated by spring actuators.

Tools used (Development tools - H/w, S/w): ElasticSearch, Kibana, Prometheus, Grafana, Spring Boot Actuator

Objectives of the project: The main objective of the project was to setup a monitoring and alerting system for services used by the company so as to generate alerts based on the health determined by VM metrics of the system.

Major Learning Outcomes: Got to learn about setting up application monitoring and alert system for real time services.

Brief Description of working environment, expectations from the company: Great work environment where you can learn while working on live projects and see your contribution real time. The place has a unique quality to get the maximum out of each individual.

Academic courses relevant to the project: OOPs, DSA

Name: Aditi Tomar (2013B3A70755P)

Student Write-up

Short Summary of work done during PS-II: Also I have learned that it's really important that we write our code in a readable and structured manner as rightly pointed out in following quote- "one man's crappy software is another man's full time business. In Rivigo, most of the front-end work occurs in React-Redux architecture. So after working on handful number of projects I feel comfortable to carry my tasks in React and Redux platform. The knowledge of react has put me ahead of my peers in my career path as now days everyone is shifting on react for front-end part. Mostly I worked on web applications and used various modules like routers, saas-ui, navigation, API etc. During one of my projects I got a chance to work on development of hybrid mobile application. Since this was the project I worked for most of my internship and from scratch, I got the most exposure and learning from this.

Tools used (Development tools - H/w, S/w): React, React-Native, Redux, Javascript, HTML, CSS, Android App development, ios app development, Codepush, Mixpanel, Xcode, AndroidStudio

Objectives of the project: I worked on front-end part of the assigned projects which are: 1) Rivigo-Finance 2) OBE/ lamRivigo App development(ios and android both) 3) Data Portal 4) Prime Panel

Major Learning Outcomes: They are capable of supporting both ios and android platforms. While developing this application from scratch, I learnt a lot about React Native and Redux integration for front-end development. I also learnt how are applications distributed organizations wide and even outside the organization. Also got exposure to Mixpanel and Codepush for applications.

Brief Description of working environment, expectations from the company: The pace at which work happens at Rivigo is really quick and you need to have your pace adjusted to it as soon as possible. People here are helpful but encourage you to first try to solve the problem yourself and then consult them. If you are expecting to work under fixed working hours, this is not the right place. You have to keep pushing yourself at every point. To conclude, Practical school programme of BITS Pilani is really beneficial as it bridges down the gap between our theoretical knowledge gained at college and its practical application in the industry. This also gives us immense exposure to a particular domain, In my case computer science, so that we can know at what pace industry works and what it demands and therefore can plan our future accordingly. The learning curve has been alternated between gaining knowledge and wisdom. Finally I feel that the goal of the PS-II should be to gain as much learning as possible.

Academic courses relevant to the project: OOP, Data Structure and Algorithm

*PS-II Station: Robert Bosch Center for Cyber Physical Systems,
Bangalore*

Student

Name: K. HIMESH (2014A3PS0036H)

Student Write-up

Short Summary of work done during PS-II: Designed a drone model with a fixed as well as single axis continuous payload. Gone through various simulation softwares like ros, gazebo, air sim, marilou environments. Learned basic controllers based on pid and worked on the same to implement the algorithm.

Tools used (Development tools - H/w, S/w): S/W - Ros, Gazebo, Air Sim, Marilou

H/W - Pixhawk, Arduino

Objectives of the project: To improve the design of quadrotor with payload and studying of its simulation.

Major Learning Outcomes: Designing Principles And Coding Related Robot Operating Systems.

Brief Description of working environment, expectations from the company: Working environment is good and interns are allowed to work according to their interests. Resembles more of a research lab, which would increase the overall idea on multidisciplinary fields.

Academic courses relevant to the project: Control Systems, Programming.

Name: Ayush Sawarni (2014A3PS0253P)

Student Write-up

Short Summary of work done during PS-II: Worked on a submodule of the Smart City Project. The aim is to do real time analytics on the traffic data coming from the Smart City Testbed in the Electronic city. The video data is very different form the standard open-source traffic video datasets in terms of the camera angle, occlusion and traffic density. The parameters that are to be estimated are, volume (no. vehicles passing through a given area per unit time), speed, and density (no. vehicles per unit area). Also

each vehicle is to be classified into various classes. The initial work involved detection of vehicles using standard object detection models such as YOLOv2. These vehicles were then classified into various categories based on the size and class. To get the vehicle count we also need to track these vehicles. This problem some under MOT(multiple object tracking challenge). This was done using Kalman Filter and deep image features. Kalman filter was used to predict the location of the bounding boxes in the subsequent locations. Then these predicted boxes were then used to assign a unique ID to the observed boxes. The distance/ cost was calculated based on the location, aspect ratio of the box and the deep image features obtained from the box.

Tools used (Development tools - H/w, S/w): Python, TensorFlow, Keras, Darknet

Objectives of the project: Video Analytics, Traffic Management

Major Learning Outcomes: 1. Object Detection Using Convolutional Neural Networks. 2. Bayesian Prediction using Kalman Filters. 3. Deep Learning Frameworks

Brief Description of working environment, expectations from the company: This is a research lab in IISc and hence there are a lot of projects on the latest embedded system and computer science innovations. The professors and the research staff are very supportive and there is a lot freedom to try out new things. Things can get a little tedious sometimes as the project/problem can sometimes be completely new and you would find very few people that have worked on it. A lot of seminars, talk's presentations are organized and it's a great learning opportunity. The lab also offers a few short 2-3 week courses on topics relevant to the ongoing projects.

Academic courses relevant to the project: Machine Learning, Deep Learning, Image Processing

PS-II Station: S.R. BATLIBOI & CO. LLP, Bangalore

Student

Name: Advait Parey (2013B3A30462G)

Student Write-up

Short Summary of work done during PS-II: 1. Client work- a) Analysis of general ledger, payroll, procurement cycle, trades payable and receivable, sales, revenue and inventory for various clients. b) Developed a tool for a client that generates financial reports taking the trial balance and chart of accounts as input. 2. Business Development work- a) Developed a tool, to analyse the sales of a company, which will be used as a client deliverable. b) Developed a tool to automate the documentation process of general ledger analysis.

Tools used (Development tools - H/w, S/w): SQL, ACL, Tableau, Monarch, MS Excel, MS Access, VBA

Objectives of the project: Client Work and Business Development Work

Major Learning Outcomes: 1. Technical knowledge of tools mentioned above. 2. Brief knowledge of how various industries works. 3. How companies record transactions and how do they account and report it. 4. Soft skills.

Brief Description of working environment, expectations from the company: Work environment depends on what time of the year it is. First semester is relatively less hectic and the interns are made to majorly focus on business development and improvement work. In the second semester, for a couple of months, there is a lot more work due to the financial year-ending. The management expects you to work equally hard as an employee. Putting in 10-12 hours a day regularly and working over the weekend is considered normal during the peak period. The team is very helpful and makes the hectic peak a lot easier.

Academic courses relevant to the project: Fundamentals of Finance and Accounting, Financial Management.

PS-II Station: S.R. BATLIBOI & CO. LLP, Chennai

Student

Name: Sadhana Srinivasan (2013B4A40654P)

Student Write-up

Short Summary of work done during PS-II: Worked on a chat bot which helps to bring analytics solutions on the go to both customers and auditors. This bot combines the business know how of auditors with cutting edge NLP and dynamic visualizations to enable everyone and every business with relevant and in depth insights. Along the same lines we developed a fraud detection mechanism that can deliver assurance to clients using unsupervised learning. The projects in EY (S. R. Batliboi & Co. LLP is a member firm of EY) are wide and help in learning about business processes and enable core learning also.

Tools used (Development tools - H/w, S/w): Python - Pandas, NLTK, Scikit Learn, TensorFlow, Flask, Numpy, JS - D3, DC, CrossFilter

Objectives of the project: Built a context-sensitive chatbot to automate repetitive data analytics tasks like dynamic interactive visualizations, summarizations, predictive analysis, and various descriptive statistics on large datasets. Provided an interactive interface for analysts to easily perform standard subtasks across multiple data pipelines. Additional features include dynamic focussed webscraping, voice recognition, multi-user and company support and has a mobile interface as well. Performed Unsupervised Fraud Detection using Isolation Forests on transaction data Identified 2.5% of transactions as anomalies and are further investigated to pinpoint fraudulent behaviour. Resulted in reduced work load for audit team and increased confidence of the provided audit opinion.

Major Learning Outcomes: 1. Business Processes 2. Chat Bots 3. Understanding user requirements and building products (ties in with 1) 4. Soft Skills 5. Stronger understand of ML and related fields

Brief Description of working environment, expectations from the company: EY is a great place to work in. The team encourages creative thoughts and initiatives. Every member's contribution is valued. The team believes in helping people grow by giving those lots of opportunities in the areas of their interest. The most important things to work here are an open mind, a positive outlook and a willingness to learn. The work hours can sometimes stretch, but that is never without good reason and in these cases, usually work from home is allowed to ensure balance between work and life as much as possible.

Academic courses relevant to the project: The work at EY is very varied, more than courses an open mind, willingness to learn and put in hours and a positive outlook will be the most important skills to succeed in this station.

*PS-II Station: Samsung R &D Institute - CP (Communication Protocol),
Bangalore*

Student

Name: Anurag Chakraborty (2011HD240727H)

Student Write-up

Short Summary of work done during PS-II: Modelling of Digital Front End Design for LTE-OFDM signals and Algorithm development for DPD correction to improve PA performance.

Tools used (Development tools - H/w, S/w): Matlab, C, Simulink environment.

Objectives of the project: To develop and optimize Simulink graphical model of DFE and DPD and simulate under different signal conditions.

Major Learning Outcomes: Learned the signal architecture and some proprietary design techniques for signal processing in the context of 5G physical layer development

Brief Description of working environment, expectations from the company: Very helpful, knowledgeable and friendly atmosphere. Good exposure to new technologies. Greater emphasis by company on personal learning development and innovative contribution. Fun filled and informal work culture. Great place to learn.

Academic courses relevant to the project: DSP and Mobile & Advanced Digital Comm.

PS-II Station: Samsung R &D Institute - Image & Video Processing, Bangalore

Student

Name: Kartik Kenny (2014A7PS0078G)

Student Write-up

Short Summary of work done during PS-II: Worked on project involving computer vision and deep learning. Also built an Android app for the same.

Tools used (Development tools - H/w, S/w): Pytorch, OpenCV

Objectives of the project: Computer vision project (confidential)

Major Learning Outcomes: Learnt more about specific computer vision problems. PyTorch. Android dev.

Brief Description of working environment, expectations from the company: Working environment is nice. Colourful. Very good if you want to pursue deep learning further. If you work well, you can get a paper/patent out of it.

Academic courses relevant to the project: Machine learning

Name: Aparajita (2014A7PS0090G)

Student Write-up

Short Summary of work done during PS-II: Worked on AI based image compression with special emphasis on developing CNN model for down sampling and super resolution of images .Overall objective was to reduce the bandwidth and storage requirements for images and improve the quality of compression.

Tools used (Development tools - H/w, S/w): Anaconda, python libraries like opencv,pytorch,tensorflow,keras etc.

Objectives of the project: Educe the bandwidth and storage requirements for images and improve the quality of image compression.

Major Learning Outcomes: Super-resolution, working of CODEC, CNN architectures and loss functions, metrics used for comparing the quality of images/videos

Brief Description of working environment, expectations from the company: Dedicated and hard working peers, strict 9 hour per day policy

Academic courses relevant to the project: Machine learning, Neural Networks, image/video processing

PS-II Station: Samsung R &D Institute - Intelligent Services, Bangalore

Student

Name: Simran Kaur (2013B3A70702P)

Student Write-up

Short Summary of work done during PS-II: Working in the Bixby Voice Assistant-NLP team on the project to do domain detection in market place search, based on user utterance and subsequently rank the domains. Applied information retrieval and machine learning models to achieve the same.

Tools used (Development tools - H/w, S/w): Jupyter Notebook.

Objectives of the project: Search and ranking.

Major Learning Outcomes: Knowledge about Search and Ranking Algorithms.

Brief Description of working environment, expectations from the company: The work environment is excellent. Strict for timings as it has 9 hours policy for daily. Projects are good and colleagues will guide in every step.

Academic courses relevant to the project: Information Retrieval, Data Mining, Machine Learning.

Name: Umang Dhiman (2016H1120151P)

Student Write-up

Short Summary of work done during PS-II: Developing data structure for Rule based NLU system of Bixby (Samsung's voice assistant), followed up by integration with the Bixby IDE.

Tools used (Development tools - H/w, S/w): IntelliJ, Bixby IDE, Java

Objectives of the project: To achieve better space and time complexity as compared to the existing trie based implementation

Major Learning Outcomes: Domain development in Bixby, Java, NLP

Brief Description of working environment, expectations from the company: Lots of interesting research related projects but it's not necessary that you get a research project. Everyone is helpful here.

Korean work culture of 45 hours work policy is strictly followed. For PPO, software competency test is must to clear follow by technical and HR interviews.

Academic courses relevant to the project: Data Structure and Algorithms, NLP

Name: Apurva Kulkarni (2013B1A70377P)

Student Write-up

Short Summary of work done during PS-II: My work involved using different Machine Learning algorithms like Support Vector Machines, Decision Trees, Linear and Logistic Regression and Deep Neural Networks to predict certain targets in the Smart Home data collected by Samsung Smart Living devices. Some targets were classification and others regression. So the DNN had to be multi-inference. The performance of these techniques, measured using RMSE and accuracy etc., was further refined using hyperparameter optimisation and then the performance of classical ML algorithms was compared to that of Deep learning.

Tools used (Development tools - H/w, S/w): Anaconda, Jupyter, Git, Python libraries.

Objectives of the project: To prove that Multi Inference Deep learning performs better than classical Machine Learning algorithms in Smart Living scenarios.

Major Learning Outcomes: Learned about version control systems, Deep Learning, practical aspects of Machine Learning.

Brief Description of working environment, expectations from the company: Serious and focused working environment.

Academic courses relevant to the project: Machine Learning.

Name: Jay Kadam (2016H1120164P)

Student Write-up

Short Summary of work done during PS-II: Generating phoneme sequence given sound files. Used bidirectional LSTM to generate the same. Learned python, tensorflow, Ubuntu environment and signal processing libraries.

Tools used (Development tools - H/w, S/w): Python, tensorflow.

Objectives of the project: Generate phoneme sequence given sound files.

Major Learning Outcomes: Signal processing, Neural Networks.

Brief Description of working environment, expectations from the company: Weekly 45 hrs need to be completed. Work is not hectic but it pressure varies from project to project.

Academic courses relevant to the project: Information Retrieval, Neural Networks.

Name: Saumya Goel (2016H1120160P)

Student Write-up

Short Summary of work done during PS-II: I am working with Bixby Deep Learning Team that helps render the new features related to Samsung's Bixby Smart Voice Assistant, which is an artificial intelligence system that is designed to make device interaction easier. The application uses Natural Language Understanding in order to interpret the request and then make recommendations or delegating the request to other applications as per the requirement.

Tools used (Development tools - H/w, S/w): Python (Tensorflow, Keras, Scipy, Numpy), Java.

Objectives of the project: Domain Classification using deep learning for Samsung Voice Assistant

Major Learning Outcomes: Various aspects of voice assistant, Deep Learning Techniques

Brief Description of working environment, expectations from the company: I was allocated project into Intelligent Services domain, which works for one of the upcoming technologies. The team and work culture is good and manager even bothers to check if we have any difficulties in working or anything else is required to assist in the smooth learning. If possible one can work towards publishing the research paper, as they provide ample of opportunities to do so. Only thing is that you have to maintain fixed 45

hours a week. If a person keeps involved in the project activities, then I don't think that will be a trouble. In all the company provides opportunities to learn and grow.

Academic courses relevant to the project: Information Retrieval, Advanced Data Mining, Machine Learning.

Name: Karan Deep Batra (2014A7PS0160P)

Student Write-up

Short Summary of work done during PS-II: Developed 3 modules. 1) Gaze Tracking - Captures the off-road gaze information when the driver performs any non-driving task. This module consists of a marker based surface tracker and a classifier to detect whether the user is looking on to the phone surface or not. 2) Driving simulator - Simulated 3D environment for driving. 3) Distraction evaluator module - Takes input from Gaze Detection module and Driving Simulation Module and evaluates the driver distraction score.

Tools used (Development tools - H/w, S/w): VS, Git, Unity

Objectives of the project: The objective of the project is to create a solution to measure driver distraction caused by using secondary devices like smartphones while driving and provide a safety score for any driver centric applications so that the developers of these solutions can iterate on the user experience and improve the safety aspect before releasing to the market.

Major Learning Outcomes: Learned gaze detection algorithms, OpenCV, Network Programming and Multithreading in python.

Brief Description of working environment, expectations from the company: The working environment was very nice. The mentor was also very supportive and was always ready to help if I get stuck somewhere in the project.

Academic courses relevant to the project: DSA, Networks, OS

PS-II Station: Samsung R &D Institute - Networks, Bangalore

Student

Name: Rahul Singla (2014A3PS0236P)

Student Write-up

Short Summary of work done during PS-II: Use information retrieval to calculate similarity between two documents.

Tools used (Development tools - H/w, S/w): Python coding language

Objectives of the project: Use information retrieval to calculate similarity between two documents

Major Learning Outcomes: Learnt various Information retrieval techniques: Tf-IDf , word2vec, doc2vec, sen2vec

Brief Description of working environment, expectations from the company: Complete the project in allotted time if possible. Workload isn't too much. 45 hrs have to be completed in a week.

Academic courses relevant to the project: Information Retrieval

Name: Sarthak Jain (2014A3PS0274P)

Student Write-up

Short Summary of work done during PS-II: 3D reconstruction using depth images

Tools used (Development tools - H/w, S/w): Python, C

Objectives of the project: Purpose a novel method for 3D reconstruction using very few depth images

Major Learning Outcomes: Computer vision, linear algebra, machine learning

Brief Description of working environment, expectations from the company: Working environment is good. People motivate us to publish papers.

Academic courses relevant to the project: Image processing

Name: Sayan Rudra Pal (2014A3PS0017P)

Student Write-up

Short Summary of work done during PS-II: Study about Hybrid Automatic Repeat Request (HARQ) and Multiuser Superposition Transmission (MUST) techniques used recently in LTE-A by 3GPP. Simulate MUST and HARQ tech. on LTE model in matlab. Implement the receiver part for the cell edge and cell centre user. Use Successive Interference cancellation (SIC) tech. on cell edge receiver.

Implement and simulate a new model of two cell edge NOMA multiplexed users experiencing Inter Cell Interference (ICI) between them. Use SIC technique to decode desired signal for corresponding user.

Tools used (Development tools - H/w, S/w): S/w- MATLAB

Objectives of the project: Study and simulate Hybrid Automatic Repeat Request (HARQ) and Multiuser Superposition Transmission (MUST) techniques used recently in LTE-A by 3GPP.

Major Learning Outcomes: One can achieve better BER performance and SNR gain by using HARQ and MUST techniques in the LTE-A systems

Brief Description of working environment, expectations from the company: Working environment is very good. Manager and Mentor both helped a lot to finish the project.

Academic courses relevant to the project: Mobile Telecommunication Network and Digital Communication

Name: Lavhale Akshay Shivajirao (2014A3PS0762G)

Student Write-up

Short Summary of work done during PS-II: I was working in communication protocol team.

Tools used (Development tools - H/w, S/w): Matlab simulink

Objectives of the project: To make 5G compatible DFE and DPD.

Major Learning Outcomes: 5G physical layer standards according to 3GPP

Brief Description of working environment, expectations from the company: Should have good programming skills and expertise of signal processing.

Academic courses relevant to the project: DSP

PS-II Station: SanDisk, Bangalore

Student

Name: Harshavardhan Valluru (2014A3PS0220G)

Student Write-up

Short Summary of work done during PS-II: I was allotted to the Product Design Engineering team. The major work was the upbringing of 64 layer 3D NAND based memory for USB products. Apart from developing and improving memory test algorithms for USB product lines, I was involved in the characterization of memory and productizing it. Most of my work was on live projects, wherein I helped sustain existing product lines and came up with ideas to productize new memory nodes. Apart from these activities, my work needed me to interact with factory located in China/ Malaysia, giving me a multi-culture work experience.

Tools used (Development tools - H/w, S/w): Internally developed Debug boards, ADVANTEST Testers

Objectives of the project: This project aims at understanding and supporting Product Engineering activities for Removable Products Group (RPG). The activities include definition of test flows, their validation and interface with manufacturing sites across sites to sustain the existing product lines and deliver new products.

Major Learning Outcomes: I have understood 3D NAND and have got a hang of Floating gate MOSFET, apart from understanding the various testing strategies and their impact on cost cutting and test time saving.

Brief Description of working environment, expectations from the company: The working environment is really good. All the seniors are quite helpful and they helped me ease into the work smoothly. The group provided me a lot of opportunities to learn with a clear and transparent form of communication.

Academic courses relevant to the project: ADVD (More specifically, SRAM and DRAM concepts)

Name: CHOVIYA JVALANT ASHOKBHAJ (2016H1230032G)

Student Write-up

Short Summary of work done during PS-II: I am responsible for defining test methodologies for USB prime memory products. We need to qualify USB prime products for certain criteria so that that test methodology can be applied to mass production at factory site. As a Product Engineer, we need to take care of product test time and yield at factory a well. We need to test small quantities of memory units at Bangalore R&D site and fix the bugs and release the test code for factory. After the release, we collect DPPM, yield and test time data from factory and analyze the same to improve test methodology. We also debug any customer return units and factory return units and modify our test methodology accordingly.

Tools used (Development tools - H/w, S/w): Hardware tools - NanoNT, USB tester (in-house developed by SanDisk)

Objectives of the project: Test methods for USB prime products, Improvement of Yield and Test time

Major Learning Outcomes: Post silicon verification of memory products, Architectures of memory products.

Brief Description of working environment, expectations from the company: The work environment requires daily communication with factory, product release related people and Test Engineers. Implementation of any test methodology modifications is done by qualifying USB prime products in small quantity at lab. Expectations from the company are that it should provide opportunities for covering more memory product lines in Product Engineering.

Academic courses relevant to the project: VLSI Test and Testability, Digital VLSI Design, Analog IC Design

Name: SHIVANSH PATHAK (2016H1230035G)

Student Write-up

Short Summary of work done during PS-II: Whenever material change or mask change happens for a memory unit, it has to be qualified to introduce into the market. Qualification is for the reliability of the product. To ensure that the memory will be good to be used in a high end product like retail Solid State Drives (cSSD), a test flow has to be made which take care of testing for all the components present in the NAND flash memory unit. Our work in PS-II includes building the test flow, building the logic for test blocks present in the test flow, testing the code build by the test engineers based on our logic with the memory units, checkout for the failures, validation of the failures using internal debugging hardware,

improving the yield of the production by analyzing the report of failures happening in the production side.

Tools used (Development tools - H/w, S/w): ADVANTEST - 5773 tester ; Internal Debugging Tool; C; Java

Objectives of the project: Qualification of BiCS(Bit Cost Scalable) memory technology for retail SSD products.

Major Learning Outcomes: - Internal structure of NAND flash for both 2D and 3D NAND. Current memory technology and innovations. Building the test flow for cSSD product. Internal logic for the test blocks used for testing memory components such as data latches, charge pum.

Brief Description of working environment, expectations from the company: Work environment is friendly and open. A person can have the understanding of the whole process that how a memory is built from scratch till the product. Lab access is granted that enables us to see and do the testing of different kinds of memory in different temperatures (-15 to 85 degree Celsius). Overall exposure given to the interns is good. Expectations of an intern is to get as much as expose as possible to the new technologies and techniques getting developed. That is quite given in the company.

Academic courses relevant to the project: Analog electronics, Digital electronics, VLSI design, Verilog, Analog IC design.

Name: Raveena Raikar (2016H1400039G)

Student Write-up

Short Summary of work done during PS-II: The objective of the internship was to understand and implement the role of a Product engineer. This mainly involved development of test flows to isolate issues occurring in the product during its life time as well as carrying out failure analysis and debug.

Tools used (Development tools - H/w, S/w): S/W-Eclipse,JMP. All HW tools are internal and confidential to company.

Objectives of the project: Development of test screens for upcoming uSD/SD controller.

Major Learning Outcomes: 1. Understanding the role of a product engineer during the verification and validation of a product. 2. Failure analysis and debug on faulty units. 3. Understanding the overall manufacturing test flow.

Brief Description of working environment, expectations from the company: PETE team of Western Digital(SanDisk) is a very energetic work space and there were multiple opportunities to explore the technical aspects of NAND 3D memory. The team is very supportive to the interns in terms of knowledge sharing. Most importantly, the work done as an intern is also considered beneficial to the company and has direct impact on revenue.

PS-II Station: Servicenow Software Development India, Hyderabad

Student

Name: Apoorva Shridhar (2013B4AA0779H)

Student Write-up

Short Summary of work done during PS-II: I worked in the content development team for a new feature on the ServiceNow platform. Work was ServiceNow platform dependent and involved use of JavaScript and PowerShell scripting. Other than this I was given a side project which was Java based (I had the freedom to choose the language, architecture, everything) which was to develop a domain specific app for my team's use. I got to work with Microsoft products like Active Directory, Azure AD, SCCM.

Tools used (Development tools - H/w, S/w): Java, JavaScript, Powershell, ServiceNow

Objectives of the project: To develop content for a ServiceNow feature and develop app for team's use.

Major Learning Outcomes: JavaScript, Powershell scripting, researching for features and coming up with thorough and foolproof development plans, got to know about latest technologies in cloud development

Brief Description of working environment, expectations from the company: Work environment is positive. Everyone is approachable and helpful. You can talk to HR about any problems. Stipend is good, plus you get free snacks and all products with MRP are available for free. Interns are treated no different than regular full time employees. Overall, a great workplace.

Academic courses relevant to the project: OOP, DSA are definitely relevant. I haven't done other CS courses on campus, so can't say if they were relevant.

PS-II Station: Symantec Software Solutions Pvt. Ltd - Data Analytics, Pune

Student

Name: Shubham Ramdas Pagui (2014A7PS0040G)

Student Write-up

Short Summary of work done during PS-II: In our project profile (Symantec - Data Analytics), we, interns were given research based projects. Since this is a research based project, you have to try so many things and see if it works. Either it works or not but you learn so much. In my project, by doing a lot of research I finally applied Deep Learning model which gave some good results. We are currently trying to file a patent and I am not supposed to disclose any information of the project.

Tools used (Development tools - H/w, S/w): Matlab, python and keras library

Objectives of the project: Cannot disclose information

Major Learning Outcomes: Improved understanding of Machine Learning, Deep Learning.

Details of papers/patents: A patent filing is going on. Cannot disclose information yet.

Brief Description of working environment, expectations from the company: I worked on a research based project. You have to do research by yourselves and go to mentor only with some recommendations, ideas or for help with existing technologies. Expectation from the mentor was to give some working results. Flexible timing hours and no dress code.

Academic courses relevant to the project: Neural Networks and Fuzzy Logic, Machine Learning

Name: Vatsal Goyal (2014A7PS0067G)

Student Write-up

Short Summary of work done during PS-II: Developing a machine learning model based on the data collected by Norton Antivirus to profile enterprise based on usage pattern. Different file submissions were categorized into different categories (Legal, Banking, HR etc.) and such feature vectors were averaged over a machine to cluster such machine vectors and build enterprise profile. Anomalous machines were detected on the basis of distance from nearest cluster.

Worked on developing a third party application for Symantec so that they can provide their vast data to third parties without compromising the integrity of the whole data and securely. It also provided them with the feature of saving the relevant data into their own databases for further analysis. It also equipped them with tools to perform data visualizations in a user friendly manner.

Tools used (Development tools - H/w, S/w): Apache hive, Apache superset, Sqlite, Celery, Maven, pyplot.

Objectives of the project: Anomaly detection based on enterprise profiling by machine learning and developing a third party application to provide symantec data to third parties.

Major Learning Outcomes: Hands on experience in real life based individual projects, how a project evolves.

Brief Description of working environment, expectations from the company: The working environment is very friendly and the employees are really helpful. Offers a lot of opportunity for growth and personal development. Company expects you to learn during the process of your projects and understand the engineering aspect of projects.

Academic courses relevant to the project: machine learning, computer programming, databases, networks.

PS-II Station: Symantec Software Solutions Pvt. Ltd. - Data Structures and Algorithms, Pune

Student

Name: Krutarth Nakade (2013B3A70574G)

Student Write-up

Short Summary of work done during PS-II: Symantec is a security company which provides software security services and products. I worked in the team of Data Loss Prevention which works by securing the accidental information leak by client's employees. My work was based on research. Clients were asking for DLP softwares to be compatible with Big Data Technologies such as Hadoop and MongoDB. I implemented Hadoop cluster in Red Hat Linux. Installed it from scratch and learned the Hadoop FileSystem(HDFS). Then I developed a Java application to crawl data on Hadoop as Symantec's software do. In this way DLP software could be linked with HDFS using my application. Similarly MongoDB is NoSQL database used to store documents in collections in JSON like syntax. This will also help Symantec to target the client's requirement of MongoDB.

Tools used (Development tools - H/w, S/w): Apache Hadoop, Apache Hive, Apache Spark, MongoDB, JAVA API.

Objectives of the project: To link the Symantec Data loss prevention tools with the HDFS and MongoDB

Major Learning Outcomes: Was able to learn and implement Big Data technologies and how they are used in real life use cases.

Brief Description of working environment, expectations from the company: Work environment is nice. Symantec's office is one of the best in EON IT Park in Pune. Team includes with highly experienced people, so there is feeling of dullness and strictness in the company. There is no party environment (if you are that kind of person). Work is nice, Pune is nice and you can have good time if you want to learn. Timings of office are relaxed. You can easily go at 10-11AM and come home around 5PM. Food availability in the cafeterias is nice. Overall a good PS station, no serious cons. Plenty of free time if you want to learn any other skills.

Academic courses relevant to the project: Machine learning, (Any Big Data courses), OOP, DBMS, OS.

Name: RAVINDRA BUDDHELAL CHATURVEDI (2013B5A70674P)

Student Write-up

Short Summary of work done during PS-II: Developed an "iOS app", worked on the Symantec Endpoint Encryption Management Agent (SEEMA) "windows application", worked on developing an application that runs in "pre-boot environment".

Tools used (Development tools - H/w, S/w): iMac, Macbook Pro, iPhone 7, Windows OS, UDK2, Visual Studio 2013, Xcode 9, Swift 4, C#, C++.

Objectives of the project: To develop an alternative mode to recover an encrypted drive, using a cellphone.

Major Learning Outcomes: Languages, Team work.

Brief Description of working environment, expectations from the company: Office has a very friendly atmosphere, everybody is willing to listen to and help anybody, everybody is easily approachable, work timings are flexible, you can stay back in office as long as you want, there's a relax room also where you can sleep when you're too exhausted or stressed. All the managers, mentors are very friendly and they don't throw their weight around on anybody. Team outings happen quite often. There's a breakout on every floor, some have pool and carrom tables too. But, they should have a very clear detailed plan of the project before an intern arrives. They spent more than a month to just clear the details of the projects, in multiple short meetings. The entire project could have been done within 2 months, had there been clarity about what to do and what not from the very beginning and an inspired atmosphere.

Academic courses relevant to the project: CP, DiSco, DSA, OOP, CN, CC, PPL, LCS, ToC.

Name: Sanket Chaudhari (2014A7PS0004G)

Student Write-up

Short Summary of work done during PS-II: Created a windows application in dot net

Tools used (Development tools - H/w, S/w): C#

Objectives of the project: Generate files dynamically on a network share.

Major Learning Outcomes: Hands on experience in C# and different network share protocols.

Brief Description of working environment, expectations from the company: Good working environment. Everyone is very friendly. No strict timing restrictions. Projects offered were not so good and with little learning experiences.

Academic courses relevant to the project: DSA OOP

Name: Sagar Gupta (2014A7PS0030H)

Student Write-up

Short Summary of work done during PS-II: The aim was to add a second factor control mechanism to removable media encryption files. The system was built using an on fly notification system to send an approval request to the owner of the file with the person's identity who is trying to decrypt the file for approval.

Tools used (Development tools - H/w, S/w): C, cpp, c#, mfc, wfc

Objectives of the project: To build a system that provides on fly access control mechanisms for removable media encrypted files.

Major Learning Outcomes: Learning web service client building UI generation patterns.

Brief Description of working environment, expectations from the company: The work env at Symantec is no short of thrilling. Mentors are amazing. I would learn a great deal of things from them.

Academic courses relevant to the project: I would learn about System Architecture, And The Whole Stack Of Software Development Starting From Drivers To Web Services To Client To UI.

PS-II Station: Tonbo Imaging Pvt Ltd. - Embedded Systems, Bangalore

Student

Name: Thota Sowmya Sree (2014A8PS0462H)

Student Write-up

Short Summary of work done during PS-II: I have implemented the VHDL code for auto-focus of a lens in SWIR camera. It involves the concepts of FPGA designing, Image and video processing, VHDL coding.

Tools used (Development tools - H/w, S/w): Quartus Simulator, ModelSim, Cyclone V FPGA (SoC kit), SWIR camera and its lens

Objectives of the project: Auto-focus feature in Avenger S-50

Major Learning Outcomes: Learnt how to Implement synthesizable codes, how fpga works, how industry level protocols and communication works.

Brief Description of working environment, expectations from the company: One can easily cope up with the work if they have interest in such concepts. They have interesting and challenging projects. Interns are expected to learn things quickly and come up with innovative ideas. Team members help their best in understanding things.

Academic courses relevant to the project: Digital Design, Analog and Digital VLSI Design, Computer Architecture, FPGA, Digital Image Processing, Control Systems

Name: Suryansh Upadhyay (2014A8PS0779G)

Student Write-up

Short Summary of work done during PS-II: The idea behind this project is to use MPU9250 to get compass heading and use it along with DM365. This report also talks about my minor projects including work on various sensors like Pressure, Temperature, Humidity and their integration to DM365 and also the work undertaken on my Official Trip to the headquarters of the Northern Command in Udhampur, Jammu and to SFO Kochi India.

Tools used (Development tools - H/w, S/w): C programming and sensors

Objectives of the project: To get real time motion data.

Major Learning Outcomes: Interfacing and communication protocols.

Brief Description of working environment, expectations from the company: Its good and timings are flexible.

Academic courses relevant to the project: Embedded Systems.

PS-II Station: Toshiba Software (India) Pvt Ltd, Bangalore

Student

Name: Hariram S (2013B5A70655H)

Student Write-up

Short Summary of work done during PS-II: Learn about NAND firmware and create mini version of the same.

Tools used (Development tools - H/w, S/w): C, Linux, Make, SVN, hardware

Objectives of the project: Create smaller version of production software and test it using given spec.

Major Learning Outcomes: Learn about embedded programming and NAND firmware.

Brief Description of working environment, expectations from the company: 9 to 5 attendance

Academic courses relevant to the project: C, data structures, algorithms, Microprocessors

PS-II Station: UBS, Pune

Student

Name: Vibhor Khetrapal (2016H1490256P)

Student Write-up

Short Summary of work done during PS-II: Acted as a Business Analyst:-Gathered Requirements from End Users Analysis of the current as-is process. Helped the Dev team understand the requirements. Documentation.

Tools used (Development tools - H/w, S/w): Excel

Objectives of the project: LRD Treasury produces daily, monthly and weekly reports for UBS AG. The current process requires a lot of manual effort. Thus, this automation project will help will help the treasury team reduce manual effort and give more granular details and analysis.

Major Learning Outcomes: Importance of Clarity of Requirements, Documentation, Team Work, Dynamic is the new static, Automation as a concept. Part of a project starting from the scratch. Lastly, application of MBA Concepts in the actual corporate world.

Brief Description of working environment, expectations from the company: Good Working environment (Corporate Culture)

Academic courses relevant to the project: Negotiation & Skills, Business Analysis.

PS-II Station: United Airlines Business Services Pvt. Ltd., Gurgaon

Student

Name: Aviral Chauhan (2014A4PS0387G)

Student Write-up

Short Summary of work done during PS-II: I learnt in great depth about how the airlines industry works and what it is like to be working on projects in Big Data Analytics. I worked as a part of the Enterprise Analytics team of the company and my initial project required knowledge of language like SQL and HIVE for querying data stored in Hadoop. The project was titled Price Anomaly Detection and dealt with capturing instances where the prices of different cabin classes deviate from the expected trend and analyzing them. After successful completion of this project, I worked on another project titled Using Machine Learning/ AI for optimizing work at Contact Centre of United Airlines. The objective is to enhance the efficiency of Contact Centre employees in responding to customers messages. To this effect, ML models were built that could generate tags for incoming messages, recommend templates used for replying and also predicted sentiment of the customer conveyed in the message. The project involved knowledge of theoretical Machine Learning Techniques in Text classification and Python Programming.

Tools used (Development tools - H/w, S/w): SQL, HIVE, MS-Excel, MS-PowerPoint, Python, Anaconda Navigator, Machine Learning

Objectives of the project: I worked on project titled Using Machine Learning/ AI for optimizing work at Contact Centre of United Airlines. The objective is to enhance the efficiency of Contact Centre employees in responding to customers messages.

Major Learning Outcomes: Machine Learning, Python - NLTK and Scikit-learn libraries, SQL.

Brief Description of working environment, expectations from the company: Mentors and Team leads were very supportive and gave sufficient time to learn the required skills and motivated us to find new ways in which problems can be dealt with. One of the perks that the employees at United Airlines enjoy is the free flights across the world. Mentors are approachable and also took separate sessions on Advanced Excel, SQL, Machine Learning and how to perform analysis on the data received. Being a part of weekly team meetings, where every ongoing project was discussed briefly was fruitful and enriching.

This gave us an insight into how the business problems are solved, how business models are optimized and how better decisions are made.

Academic courses relevant to the project: Database Management, SQL, Machine Learning

Name: Prakhar Srivastav (2014A8PS0450P)

Student Write-up

Short Summary of work done during PS-II: I have worked on IRREGULAR OPERATIONS and CURRENCY CONVERSION ANALYSIS. The project aimed to optimize various operational aspects of the organization. Analysis was drawn and a report was generated and sent to the stakeholders on a daily basis. The entire process along with outlier detection and reporting was automated.

Tools used (Development tools - H/w, S/w): SQL, PYTHON, EXCEL, SPOTFIRE

Objectives of the project: Improving efficiency of the operations in various aspects of the organization.

Major Learning Outcomes: Learned new languages and tools. Improved my soft skills along with my technical skills. Worked in a professional environment on a real world problem.

Brief Description of working environment, expectations from the company: United Airlines provides a very nice working environment where everyone is extremely helpful and everyone strives to learn and grow constantly. It provides training to all the new joiners and also advanced training on many new technologies to everyone. Work life balance is very good and everyone gets enough opportunity for self learning and growth. Working hours are flexible in nature. United Airlines provides a healthy working environment and provides a platform for everyone to grow.

Academic courses relevant to the project: Cs F212 Database Management.

PS-II Station: UPGRAD, Mumbai

Student

Name: NAVNIT ASHOK KHANKE (2016H1490234P)

Student Write-up

Short Summary of work done during PS-II: UpGrad is an online higher education platform, which provides relevant programs designed and delivered in collaboration with world class faculty and industry. It serves in both the B2B and B2C environment. TALLY and GSK are the clients in B2B. The course developed for them is a marketing and sales program for the mid and bottom level management. The course is primarily intended towards the sales and marketing professionals. The content is designed keeping in mind the industry standards and the concepts relevant to TALLY and GSK. The career services is a facility at UpGrad, helping the learners upgrade their skills and help them seek transition in the same or other industry. This involves competency mapping and working in the related field of specialization.

Tools used (Development tools - H/w, S/w): ZOHO, Salesforce, MS Office, UpGrad CMS

Objectives of the project: Designing the content for the learners at TALLY and GSK to upgrade their marketing skills and enhance productivity. Help the learners of UpGrad for career transitions and finding the opportunity relevant to the courses taught to the learners for a job change.

Major Learning Outcomes: Mapping the competency and designing the content around the learning objectives. Uploading and handling the content management system. Managing cross cultural communications and projects. Pitching the corporates, tie ups and relationship management. Facilitating placements, maintaining corporate relations. Hands on experience on handling ZOHO, UpGrad platform

Brief Description of working environment, expectations from the company: At UpGrad, you would explicitly feel the degree of freedom at work. The managers and the employees are very friendly. I expect a competency mapping to be performed by the HR based on the skill sets of the joiner and allot the departments accordingly.

Academic courses relevant to the project: Marketing Management, Organization Behavior, Marketing Research, Quantitative Techniques.

Name: Ankit Gangwal (2016H1490221P)

Student Write-up

Short Summary of work done during PS-II: Created a course on Consumer Behavior which was a part of a program named PG Program in Management with specialization in Sales and Digital Marketing in association with IMT, Ghaziabad. Ratings received for the course were 4.55/5. Created content for career resources in IMT program. Carried out analysis of Social Media Marketing and SEO/SEM Marketing course.

Tools used (Development tools - H/w, S/w): Freshdesk, BIME, Brightcove, Excel, Google docs, Google sheets

Objectives of the project: The objective of the project is to create world class content and enable learners to make transitions into desired profiles after they successfully complete the program.

Major Learning Outcomes: Digital marketing, Social Media Marketing, SEO/SEM Marketing, Startup culture, Content creation, Team work, Language skills, Presentation skills, Discipline and adherence to timelines.

Brief Description of working environment, expectations from the company: Employee friendly work environment with flexible work timings, open culture, work from home feature.

Academic courses relevant to the project: Consumer Behavior, Product & Brand Management, Marketing Management, Marketing Research, Human Resource Management, Digital Marketing, Quantitative Methods.

Name: Pranav Sood (2014A7PS0155P)

Student Write-up

Short Summary of work done during PS-II: I developed content for the Big Data program offered to the students. I worked on the technology of Apache Pig. I learnt about it and then developed content for it with real life examples, practice questions and industrial demonstrations.

Tools used (Development tools - H/w, S/w): S/w Apache Pig, HDFS, Hadoop

Objectives of the project: To develop content for PGBDE program of UpGrad in association with BITS Pilani, especially for the module of Apache Pig.

Major Learning Outcomes: I learnt about work culture in startups, management skills, and also a lot about one of the upcoming technologies of Pig.

Brief Description of working environment, expectations from the company: The mentors and managers were extremely helpful and supportive, ensuring that I get all the required help and resources to flourish in the work environment and perform up to my potential for the benefit of both me and the company.

Academic courses relevant to the project: OOPs, DSA, DBMS

Name: Akshay Gupta (2016H1490236P)

Student Write-up

Short Summary of work done during PS-II: Worked in the academic & research team at upgrad, developed content for Technology Business Management Program for the course of statistics and quantitative methods. Also worked in to create content for course on blockchain.

Objectives of the project: To create world class content for the learners of upGrad

Major Learning Outcomes: 1. Content Creation 2. Documentation 3. Project Management

Brief Description of working environment, expectations from the company: The working environment at upgrad is excellent, the culture is open and free with individual ownership to all the interns.

Academic courses relevant to the project: Statistics & Quantitative Methods, PM, Marketing, Finance

PS-II Station: Urban Clap, Gurgaon

Student

Name: Ronak Jain (2014A7PS0017G)

Student Write-up

Short Summary of work done during PS-II: Work was done on BE based on NodeJS, and also on FE on the UrbanClap's internal-dashboard called Sherlock, based on AngularJS. In the beginning as we worked on various projects, one of the most fascinating experiences was learning and visualizing how the data we inputted from Sherlock was being stored in DB and being displayed on the FE customer apps, because it was the first time we had a clear idea of how the apps we use in everyday life actually work. UrbanClap, being a startup has a very quick development cycle. Our code was being pushed to production almost every other day. Also if your code was wrong, and it was pushed to production, then it was your responsibility to identify the bugs and correct them. This gave us a sense of code ownership, which in turn motivated us to write better code.

Tools used (Development tools - H/w, S/w): HW- Dell Inspiron 5588, S/W - NodeJS, AngularJS, Ubuntu, Jenkins, ELK

Objectives of the project: Improving content delivery to FE

Major Learning Outcomes: NodeJS Back End programming, AngularJS FE programming, MongoDB

Brief Description of working environment, expectations from the company: Being a fairly new startup, everyone in the company is fairly passionate about their work. As an example, some of my co-workers volunteer to come on Saturday, in spite of it being a 5 day week company. As most people in the company are young, the working environment is very casual. There were no clearly defined work timings, but most people put in around 8 to 10 hours of work anyway. We were also allowed to work from home, though this was used only in emergencies. All of us interns were being treated as full-time workers, meaning we were given work similar to a full time worker and of course we were expected to finish it with the same quality and timeframe as a full time worker. I really enjoyed working at UrbanClap as it allowed me expand my horizons beyond what was taught and learned at college and see how to work in the industry. UrbanClap also gave me the confidence to join the industry as a developer.

Academic courses relevant to the project: Database Management, Computer Programming.

Name: Ronak Jain (2014A7PS0017G)

Student Write-up

Short Summary of work done during PS-II: I developed the architecture of the new react based internal dashboards that the company uses. This was accomplished by bringing in significant cutting edge technologies in the tech stack to make the development experience easier and faster. Alongside I also achieved the core goal of the project which was to reduce the time required to create a new dashboard by creating common modules that can easily be used by just creating a JSON schema.

Tools used (Development tools - H/w, S/w): There was no custom hardware used in my project. On the software side, we used VSCode as the text editor, ESLint as the linter, Prettier to automatically indent / beautify code and commitizen for enforcing commit standard.

Objectives of the project: To reduce the time required to create a new dashboard from the current 15-30 days to 3-5 days

Major Learning Outcomes: I learned a lot about how startups optimise their resources. I also learned how to manage / architecture a tech project from the start to the end.

Brief Description of working environment, expectations from the company: Being a startup the working load for an intern is as much as expected from a regular employee. There are no defined in and out time but everyone expects you to work for at least 8 - 10 hours, despite this the focus is on the work output, if your work output is great than you can work for shorter durations and can take the privilege of working from home.

Academic courses relevant to the project: There are no courses in college currently focussed on teaching development technologies or skills required for computer engineering like how to write unit tests, how to do basic GIT operations, etc. I think there is an urgent need to add few electives that focus on these subjects as they are considered very important by the IT industry. DSA was the course that did help in creating the required data structures for my project.

PS-II Station: UST Global Infinity lAbs- Machine learning, Thiruvananthapuram

Student

Name: Buddhavarapu Spandana (2013B2A20826P)

Student Write-up

Short Summary of work done during PS-II: My project was in Data Science under the guidance of Ms. Anila Thomas. Our objective was to clean up data effectively using Machine Learning Algorithms. There were three use cases which we took up namely Deduplication, Test Data and Wrong Fields.

Tools used (Development tools - H/w, S/w): Python

Objectives of the project: To clean up large databases and minimise errors

Major Learning Outcomes: Industry problems exposure, dealing with clients directly, learning the intricacies of machine learning.

Brief Description of working environment, expectations from the company: Working environment was excellent, timings are flexible, my only expectation from the company is that it lets me stay on.

Academic courses relevant to the project: Machine Learning, Data Mining, OOP.

Name: Kshitij Mathur (2013B5A40559G)

Student Write-up

Short Summary of work done during PS-II: We worked on developing Data Quality solutions using machine learning. Solutions we developed are in (i) De-duplication (ii) Test Data in Production (iii) Wrong Fields

Tools used (Development tools - H/w, S/w): Python

Objectives of the project: Develop Data Quality Solution

Major Learning Outcomes: Machine Learning, Deep Learning, Keras, Tensorflow

Brief Description of working environment, expectations from the company: Expectations include (i) good client exposure. If you do well, you can showcase to clients (some are fortune 500 companies) (ii) Amazing campus (iii) Peaceful city.

Academic courses relevant to the project: Optimization, Machine Learning, Natural Language Processing, Computer Vision.

Name: Himanshu (2016H1030071P)

Student Write-up

Short Summary of work done during PS-II: .NET app for the use of the company upload as well as fetch of data.

Tools used (Development tools - H/w, S/w): Visual Studio Express.

Objectives of the project: data fetch including the design of underlying mechanism.

Major Learning Outcomes: New Technologies.

Brief Description of working environment, expectations from the company: Great and flexible work culture, expect for the continuation.

*PS-II Station: USt Global Infinity Labs-Block Chain,
Thiruvananthapuram*

Student

Name: B Varun Reddy (2013B2A40777G)

Student Write-up

Short Summary of work done during PS-II: I have worked on databases specifically Neo4j a leading graph database to build a chat bot application for an us based client NetApp.

Tools used (Development tools - H/w, S/w): Neo4j.

Objectives of the project: To create a chat bot application for a us based client NetApp.

Major Learning Outcomes: I learnt a great deal about programming like Java and Neo4j with a little bit machine learning.

Brief Description of working environment, expectations from the company: The working environment is very conducive for learning and gives you a lot of flexibility to choose projects from different streams of computer science. The projects very much deals with building real application for big multinational client.

Academic courses relevant to the project: Neo4j

PS-II Station: USt Global Infinity labs-Internet of Things, Thiruvananthapuram

Student

Name: Amith Thomas (2014AAPS0256H)

Student Write-up

Short Summary of work done during PS-II: A python based search function, that has both web and documents as data source. The interface will be that of a chat boot and we can ask questions to it and it will return the data from the data source

Tools used (Development tools - H/w, S/w): Python, NLP, Clustering, JS , Socket, REST API, flask server

Objectives of the project: A portal for all details regarding the department

Major Learning Outcomes: Python, and REST API

Brief Description of working environment, expectations from the company: Mentor was constantly there for us at any moment we needed help and inspiration

Academic courses relevant to the project: CP

Name: Chimam Jain (2014A3PS0277G)

Student Write-up

Short Summary of work done during PS-II: Nice job timings

Tools used (Development tools - H/w, S/w): HTML, CSS

Objectives of the project: Front end development

Major Learning Outcomes: Front end development

Brief Description of working environment, expectations from the company: Hope for PPO but no response

PS-II Station: UST Global Infinity Labs-Robotics, Thiruvananthapuram

Student

Name: J D N DINESH (2014AAPS0256H)

Student Write-up

Short Summary of work done during PS-II: Worked on augmented and virtual reality using unity tool ,where in augmented reality, i have created a mobile app where it shows the company's logo where the branches of the company are located on focus ing the camera on the map. And in virtual reality we have created an application where you can customize your own carpet in a model house. We have built this on gear vr and also on oculus rift.

Tools used (Development tools - H/w, S/w): Unity-3d,adobe photoshop,blender,gear vr,oculus rift

Objectives of the project: Customization of carpet

Major Learning Outcomes: We have learned about ui/ux in vr

Brief Description of working environment, expectations from the company: Its a good company for the internship work, and environment is good.

Academic courses relevant to the project: Java

Name: Neel Khakhar (2014A4PS0340P)

Student Write-up

Short Summary of work done during PS-II: Worked on Knowledge management system for Equifax using clustering, tfidf.

Tools used (Development tools - H/w, S/w): Python, NodeJS, socketio, flask, mongodb

Objectives of the project: To retrieve information for Equifax accounts via a chat bot

Major Learning Outcomes: Learnt several ML algorithms and JavaScript

Brief Description of working environment, expectations from the company: Good facilities and mentorship, relatively relaxing work based on responsibilities and not orders

Academic courses relevant to the project: ML, C, Math

Name: Devdutt S (2014ABPS0629P)

Student Write-up

Short Summary of work done during PS-II: Our project was to develop a knowledge management system with a chat bot interface for a financial Services client of UST global

Tools used (Development tools - H/w, S/w): Python, machine learning, deep learning, natural language processing

Objectives of the project: To design knowledge bot for a financial services client of UST Global.

Major Learning Outcomes: Learned about natural language processing, machine learning and deep learning.

Brief Description of working environment, expectations from the company: Decent working environment. Absence of experts in the field was a hindrance.

Academic courses relevant to the project: Machine learning, Artificial Intelligence.

*PS-II Station: UST Global- Infinity Research- 3D printing,
Thiruvananthapuram*

Student

Name: Yedukrishnan A V (2016H1030072P)

Student Write-up

Short Summary of work done during PS-II: Creating a website that converts mindmap files to testcases

Tools used (Development tools - H/w, S/w): java, eclipse, JavaScript

Objectives of the project: Creating a website that converts mindmap files to testcases

Major Learning Outcomes: Got a feel of working in a Software company, Used various Software Development Strategies

Brief Description of working environment, expectations from the company: Good working environment and very friendly Employees.

Academic courses relevant to the project: Java basics, Algorithms and Data structures

PS-II Station: UST Global Infinity-Cloud Computing, Thiruvananthapuram

Student

Name: Shreyansh Agarwal (2012A3PS0131P)

Student Write-up

Short Summary of work done during PS-II: Worked on web development. Learner the basics html, css first then we moved on to bigger frameworks like REACT-JS for front-end and DJANGO for backend. Build a functional website with animations.

Tools used (Development tools - H/w, S/w): Atom code editor, python, reactjs, django, sqlite, ubuntu

Objectives of the project: Make a website of a working POS SCREEN.

Major Learning Outcomes: Learner web designing both front-end and back-end.

Brief Description of working environment, expectations from the company: Nice environment. Open space shared by lot of people. Supportive mentors. Regular feedbacks.

Academic courses relevant to the project: Computer programming.

Name: K S Vamsi Reddy (2014A3PS0139G)

Student Write-up

Short Summary of work done during PS-II: Built an enterprise level web application.

Tools used (Development tools - H/w, S/w): Angular, Node js.

Objectives of the project: Confidential.

Major Learning Outcomes: ML, NLP classifier, web development.

Brief Description of working environment, expectations from the company: Should be well dressed and groomed.

*PS-II Station: UST Global-Infinity lab-Artificial Intelligence,
Thiruvananthapuram*

Student

Name: J. Bhargav Raju (2016H1120167P)

Student Write-up

Short Summary of work done during PS-II: Worked on full stack web development & bug fixing.

Tools used (Development tools - H/w, S/w): Elasticsearch, MongoDB, Angular, Kibana.

Objectives of the project: Develop an app to get detailed social media analytics of the client.

Major Learning Outcomes: Learnt web development and API service coding.

Brief Description of working environment, expectations from the company: Work environment, work-life balance is good. Company doesn't have many projects currently. If you are a person with CS background, you have to get lucky with the project allocation for the PS to be worth it.

Academic courses relevant to the project: Computer Programming, Object Oriented Programming, Data Structures.

Name: Varun Kumar Kadambala (2014A8PS0424G)

Student Write-up

Short Summary of work done during PS-II: Built an enterprise level full stack web application.

Tools used (Development tools - H/w, S/w): Angular, Node, Express, Python, MySQL

Objectives of the project: The details of the project are irrelevant.

Major Learning Outcomes: Learned about the SD cycle.

Brief Description of working environment, expectations from the company: Employee friendly, each intern is allocated a desk with a 16gb ram computer.

Name: G SAI SAMHITHA (2014AAPS0296H)

Student Write-up

Short Summary of work done during PS-II: The aim of the project is to apply predictive analytics in the field of Quality assurance and software testing through a Dashboard which gives insights into the testing process through interactive visualizations of defect metrics/test case metrics. My role in the project is as follows: Extract software testing data from JIRA, filter for defects and store it in a database for analysis. Using the database, visualize the defect analysis reports and insights in Power BI. Automate the above process such that reports are updated on daily basis and any new developments in JIRA are reflected in the report and insights in a timely manner. Created a model using machine learning algorithms in Azure ML studio to predict the priority of a defect given its release cycle, severity, the test cycle in which the defect was detected, and the test phase in which the defect was detected.

Tools used (Development tools - H/w, S/w): Javascript, Node.js, Microsoft Power BI, MySQL database, Azure ML studio

Objectives of the project: Apply Predictive analytics in the field of QA.

Major Learning Outcomes: Usage of JIRA, a project tracking software, Machine learning concepts.

Brief Description of working environment, expectations from the company: The work environment was flexible, where we were given time at the beginning to learn about the project and the tools used.

Academic courses relevant to the project: Object Oriented Programming.

PS-II Station: UST Global-Infinity Labs- Augmented Reality, Thiruvananthapuram

Student

Name: Sachin Suresh (2014A4PS0253G)

Student Write-up

Short Summary of work done during PS-II: Data De duplication, Test Data in Production and Wrong Fields Data. The objective was to use Machine Learning Tools to find solutions to these use cases. When we started the work, we were able to find out that except De duplication use case, the other use cases weren't well developed. Also we changed the approach to De duplication as we first used ANNs and then we included Tensorflow. We were able to increase the accuracy of the use case testing from ~98% to 100%. The other two use cases were also solved using Random Forest Classifier. A UI was built for these cases with display of visualization. A version of the solutions to run on MongoDB was also prepared.

Tools used (Development tools - H/w, S/w): Python Programming Language, MongoDB, Tensorflow, Tensorboard, Keras, Jupyter Notebook

Objectives of the project: Deduplication, Test Data in Production, Wrong Fields data use cases with UI

Major Learning Outcomes: I was introduced to Python, Machine Learning, Neural Networks, Deep Learning

Brief Description of working environment, expectations from the company: It took around 1 month for the projects to be allotted to everyone. First few weeks comprised of talks by different people working in different sections of the company. Every employee in UST is very helpful and approachable. However few people have a good idea about the machine learning research area. Our mentor being one of the Directors, was very busy most of the time, so meetings were mostly once in a month or so. Mostly we used to be in touch through our whatsapp groups. Every one gets their own PC, so it is very easy to learn about some new technology or work on the projects. So even a person from a non-CS branch with almost zero experience in IT-related technologies can do work here. The work environment is pretty relaxed as there is not much pressure from the higher authorities.

Academic courses relevant to the project: Optimization, Technical Report Writing, Computer Programming

Name: Shashank Subramaniam (2014A4PS0327G)

Student Write-up

Short Summary of work done during PS-II: Built an Enterprise level web app

Tools used (Development tools - H/w, S/w): Angular, nodeJs

Objectives of the project: Confidential

Major Learning Outcomes: ML, mlp classifier

Brief Description of working environment, expectations from the company: Own computer system, healthy work environment. strict dress code to adhere to.

Name: Karnam Venkata Sai Naveen (2014A4PS0233P)

Student Write-up

Short Summary of work done during PS-II: I did two projects related to knowledge graph and orientdb database.

Tools used (Development tools - H/w, S/w): Python,Gremlin,Groovy,orientdb,Neo4j

Objectives of the project: To create a search engine for equifax

Major Learning Outcomes: Mostly practical learning

Brief Description of working environment, expectations from the company: It's very good, the employees are very nice. The companies motto is 'We give responsibilities, not orders. It's pretty much says about the work environment.

Academic courses relevant to the project: They are somewhat related.

Name: Akshaya Singhal (2014A3PS0186G)

Student Write-up

Short Summary of work done during PS-II: Developed a VR app(MVP) for Mohawk account. Via this app a user can try out different floorings in a home or office environment under different lighting conditions.

Tools used (Development tools - H/w, S/w): Unity 3d, blender, visual studio, oculus rift, gear VR.

Objectives of the project: To give user a shopping experience that makes her life easier and help her decide better, what carpet would look good in her house or office.

Major Learning Outcomes: I learnt a great deal about the up and coming technologies like ar and vr, about creating an user experience and design an interface that is much different from the 2d screens.

Brief Description of working environment, expectations from the company: Very open and healthy environment for an intern. Mentors are supportive and give freedom as how we want to move the project forward. Feedback system is also amazing and helpful for over all development of the company.

Academic courses relevant to the project: C programming.

PS-II Station: Veritas Software Technologies India, Pune

Student

Name: Someswar Roy (2015H3130074H)

Student Write-up

Short Summary of work done during PS-II: Designed and implemented a new algorithm for Cloud Certificate Revocation Check in an Enterprise software. Added new features to a Enterprise software regarding handling of cloud provider certificates.

Tools used (Development tools - H/w, S/w): C++ libraries like CURL and Openssl, Git.

Objectives of the project: Securing communication with cloud providers, for data transfer. Adding new features for customers to handle cloud provider certificates.

Major Learning Outcomes: Learned about SSL protocol and various certificate Revocation algorithms (CRL list, OCSP, OCSP Stapling). Learned to work with cloud plugins like S3, Azure and Swift.

Brief Description of working environment, expectations from the company: All company employees are extremely helpful and understanding. They are ready to spend extra time to explain and resolve intern doubts. They give buffer periods for an intern to learn and acclimatize to the tools before setting tasks and deadlines. There are some highly skilled employees who can easily solve any doubt placed before them. However, an intern needs to be proactive when asking for work. There are no strict timings, but there is daily reporting of progress.

Academic courses relevant to the project: Network Security, Information Security, Cryptography, Cloud computing, Operating Systems.

PS-II Station: Vestas Technology Ltd., Chennai

Student

Name: RUSHABHA SHAH (2016H1410047H)

Student Write-up

Short Summary of work done during PS-II: Vestas treats interns as employees. You will be dealing with work similar to employees. You will have access to all documentation of Vestas. You will learn about process driven organization & will be accountable for deliverables of team you will be working in. You can come up with idea for process streamlining/optimizing/development. If your idea is good enough you will be allowed to work on that. Else you can continue work on regular deliverables.

Tools used (Development tools - H/w, S/w): Vestas Turbine Simulator, Flex5

Objectives of the project: To learn effect of Ice accreted on blades on performance of wind turbine

Major Learning Outcomes: Aerodynamics Knowledge application, Effect on performance

Brief Description of working environment, expectations from the company: Work environment is great. You will have enough freedom to balance work & learn about your area of interest. There is high chance of PPO if you perform well. The people & culture is good for a budding engineer.

Academic courses relevant to the project: Dynamics & Vibrations, Mechanics , Aerodynamics.

Name: Siddhesh Mane (2016H1410096P)

Student Write-up

Short Summary of work done during PS-II: My focus during internship was, mathematical modeling of wind turbine tower to find out stress reserve factors for ultimate and buckling stress acting on tower;also determine 1st natural frequency of tower using Rayleigh method. Apart from that design of tower and anchor cage based on site conditions or as per the customer requirement to reduce cost and weight of tower. I was also part of internal studies, which are helpful in analyzing risk and helpful for decision making.

Tools used (Development tools - H/w, S/w): VBA programming, ms-excel, Matlab and Ansys

Objectives of the project: Optimize the weight and cost of tower, automate design process, Design optimized Anchor case.

Major Learning Outcomes: Successfully optimized the wind turbine tower and Anchor Cage according to the customer requirement.

Brief Description of working environment, expectations from the company: Working environment is really good. From day one everyone was supporting and make you comfortable. The manager will not hesitate to give you responsibilities also support your new idea and encourage to execute these ideas by providing proper guidance. There is nothing holding you back from learning as much you can. You can set your own limits on leanings and you can achieve them with proper efforts and dedication.

Academic courses relevant to the project: Strength of materials, Dynamics and Vibration, Machine Design, Finite element Analysis.

Name: Sreedhar S (2016H1410048H)

Student Write-up

Short Summary of work done during PS-II: I was part of the tower engineering department. I was responsible for the design and optimization of wind turbine tower, flanges and anchor cage as per IEC and Eurocode guidelines. In depth failure analysis is performed considering the various load acting on the components like fatigue and extreme loads. VBA programming is used to perform the calculations. The loads are simulated as per the site conditions. The objective to is to arrive at the optimum design.

Tools used (Development tools - H/w, S/w): Software- VBA programming

Objectives of the project: Arrive at the optimum tower design and provide the detailed cost report.

Major Learning Outcomes: Learned what are the driving factors for design of wind turbine tower, flanges, foundation and anchor cage. Understood the IEC and Eurocode guidelines .

Brief Description of working environment, expectations from the company: The working environment is good as there are no strict rules to be followed and the timings are flexible. The company expects you to finish the tasks allotted to you before the deadline and your status will be monitored weekly .

Academic courses relevant to the project: Dynamics and Vibration, Strength of Materials , Finite Element Method

Name: Bhuvan karthik (2016H1410046H)

Student Write-up

Short Summary of work done during PS-II: Excellent place to work

Objectives of the project: Deliver work.like employee

Major Learning Outcomes: Wind science

Brief Description of working environment, expectations from the company: Gel into the team seamlessly

Academic courses relevant to the project: Wind energy

PS-II Station: VMware Software India Pvt. Ltd., Bangalore

Student

Name: Rahul Ladda (2014A7PS0078H)

Student Write-up

Short Summary of work done during PS-II: In the recent deployment of the Horizon Cloud, Azure support has been added to the product. In the Azure cloud, the cost to the customers is based on the amount of time the Virtual Machines (VM) are powered on. This requires power on/power off of VMs to be managed. Elastic Farm Management Algorithm automates the power management of VMs. Since this algorithm forms the core part of the product in Azure deployment, it will have enhancements and bug fixes in the future releases and regression errors are possible. To reduce the errors, the tests for this algorithm has to be carried out on developers' side through integration and unit testing. So integration testing of the algorithm was carried out successfully.

Tools used (Development tools - H/w, S/w): Spring, Hibernate, JUnit, Mockito, GIT, Eclipse, Putty, Command Prompt

Objectives of the project: The objective was to successfully develop few tests for the Elastic Farm Management Algorithm on the developer's side.

Major Learning Outcomes: The integration testing for all kinds of Server Pools i.e., Static Pools, Floating Pools and RDSH Pools have been successfully carried out. Few improvements to the Elastic Farm Management algorithm were also suggested. There was so much to learn from the team I worked with, since all of my colleagues were highly experienced. The ability to understand enterprise products was achieved to certain extent. Programming in Java has been improved. Few skills like Spring, Hibernate have also been exposed to and learnt from the root level.

Brief Description of working environment, expectations from the company: The working culture of the company is not very good for freshers. As a fresher, one can do a lot of work and should be exposed to pressure situations. A fresher may not find this in VMware. But if one has a plan for higher education, VMware is a go to company.

Academic courses relevant to the project: Software Engineering, Database Management System, Object Oriented Programming

Name: Raghav Keesara (2013B4A70097P)

Student Write-up

Short Summary of work done during PS-II: Swagger Documentation of RestAPIs, Feature implementation, Bug Fixes, Security Issues

Tools used (Development tools - H/w, S/w): Java-Spring Framework, Angular

Objectives of the project: Bug Fixes for "Workspace ONE" Service

Major Learning Outcomes: Product Development

Brief Description of working environment, expectations from the company: Team can be research based or development based, I'm based in development based team where I work on par with full time software engineers in implementing new features or bug fixing the existing features, whereas in research based projects work will be to build something new.

Academic courses relevant to the project: Object Oriented Programming, Data Structures & Algorithms

Name: Snehith Alapati (2013B3A70709G)

Student Write-up

Short Summary of work done during PS-II: I worked with Horizon View Server team which was responsible for maintaining the core components of the product. I worked on the test framework to automate bug fixes and enhancement testing. I also fixed a number of bugs and worked on a few enhancements during the duration of the internship.

Tools used (Development tools - H/w, S/w): Java, C++, flex, View

Objectives of the project: I had to deliver bug fixes and enhancements on a daily basis and also worked on the test automation framework for View API

Major Learning Outcomes: Server side API handling, OS level concepts, Virtualization

Brief Description of working environment, expectations from the company: The work depends on the team you are allotted in the beginning. In terms of work culture, VMWare is like most other major product companies, there is flexibility and provides ample freedom to explore and learn. My team had incredibly approachable and talented developers. For an intern, there isn't massive work pressure and expectations are reasonable. You won't have any heavy workload either, its manageable and you work on what the team works on, which means your code goes into production often. From a learning perspective, you'll know how work happens in the industry, software development isn't purely about programming. You'll learn a lot about virtualization and requires a decent background in OS and networks. The chances of working on a new product or a feature are fairly low and work would be limited to code maintenance which involves bug fixing and minor enhancements. If the manager is impressed with your work, they might offer you a job, an interview may be taken if the team doesn't have positions available.

Academic courses relevant to the project: OS, Networks, Object oriented programming.

Name: Uddhav Mishra (2014A7PS0048H)

Student Write-up

Short Summary of work done during PS-II: 3 projects Implemented backend and frontend part of new feature for Vmware Identity Manager that synchronizing applications from Okta(another SSO) to Vidm. Designed and implemented a diagnostic tool in Python for v-IDM customers for generating report on common faults. Created powershell automation script that helps in one step deployment of v-IDM and can be used for deploying virtual machines according to the environment in which deployment needs to be done.

Tools used (Development tools - H/w, S/w): Spring framework,Maven,Java,Python,AngularJS,REST api's, Powershell.

Objectives of the project: Implementing the feature for syncing okta applications in vidm & creating a diagnostic tool & creating powershell script for v-IDM deployment.

Major Learning Outcomes: learnt software development and various aspects of it such as design, development, testing , review etc. Learnt using new technologies and frameworks.

Brief Description of working environment, expectations from the company: The company has a typical IT-MNC work culture. The people are good, friendly and helping. No work pressure on interns. Amount of work given is completely dependent on individual interest. Low/No priority work given.

Academic courses relevant to the project: Object Oriented Programming, Computer Networks

PS-II Station: Walmart Global Technology Services, Bangalore

Student

Name: Ayush Gupta (2014A7PS0864H)

Student Write-up

Short Summary of work done during PS-II: Created an application using Apache Camel for migration of 16 existing workflows in Tibco BW for ASDA-George. The application being a message oriented middleware primarily consisted of downloading files of each workflow from various SFTP directories as well as enterprise queues currently being used by Walmart by polling at regular intervals. Then came the processing stage where the downloaded files are read from the common storage platform (NFS-Shared in this case) and then transformed to corresponding output files depending on the workflows. Also proper logging architecture had to be made for the project. CCM was also incorporated in our migration project.

Tools used (Development tools - H/w, S/w): Apache Camel, Java, Hazelcast , CCM , log4j2 , Java Spring , SOAP Web Services

Objectives of the project: Migration of existing 16 workflows of ASDA-George

Major Learning Outcomes: Apache Camel, Java, Hazelcast, CCM , log4j2 , Java Spring , SOAP Web Services

Brief Description of working environment, expectations from the company: Nice Company to work in. Perfect balance between professional and personal life. You can get opportunities to work in wonderful projects if you are willing to. A perfect place for doing your internship. Managers expect you to be punctual and work from home is not that much encouraged. They want you to be sincere and tell them about your project milestones at each and every stage. Teams are very helpful and you could learn a lot probably if you wanted to from Walmart Labs.

Academic courses relevant to the project: DSA,DAA,OOPS,OS

Name: Aman Garg (2014A7PS0073H)

Student Write-up

Short Summary of work done during PS-II: My work was on middleware layer i.e Node js , Hapi js. I was supposed to merge ios and web API's to make common service layers for web and mobile. I also worked on shifting Walmart's current Pharmacy platform to Electrode platform.

Tools used (Development tools - H/w, S/w): Javascript , Xcode , Charles , Postman , Node js, Hapi js , React js.

Objectives of the project: Apply all those technical knowledge learnt in IT industry on high scale.

Major Learning Outcomes: Different frameworks i.e node, react , hapi , java and how to apply these in IT industry.

Brief Description of working environment, expectations from the company: Walmart have a very open culture. We get to interact high technical employees. Here every employee is very friendly and understand how do latest frameworks operate on high scale. Work culture is very good. You don't have pressure for target. They give you a large timeline for completing any project.

Academic courses relevant to the project: OOPS , DSA , DBMS.

Name: Anshul Chhabra (2013B2A70803P)

Student Write-up

Short Summary of work done during PS-II: Front end development.

Tools used (Development tools - H/w, S/w): React, Node, Pulse.

Objectives of the project: Create a new store finder for Walmart Canada.

Major Learning Outcomes: Web development.

Brief Description of working environment, expectations from the company: Healthy working environment and good facilities.

Academic courses relevant to the project: Computer Networks, Object oriented Programming.

Name: Sai Rajiv Krishna Singuluri (2014A7PS0073H)

Student Write-up

Short Summary of work done during PS-II: NextGen Voice is a product which enables the managers in the distribution centres to create workflows for the associates and then provide voice guided picking on their mobile devices. My project was the Voice Android Application which is to be used by the associates in the distribution centers for sending and receiving commands in order to complete their workflow trips. It involves the use of technology like Java, Android Studio, EMDK, gRPC and AirWatch.

Tools used (Development tools - H/w, S/w): Android Studio, Java, CMUSphinx, VertX, gRPC, EMDK

Objectives of the project: NextGen Voice team primarily works with the Order Fulfillment team in order to provide voice capability to the workflows to be followed by the order fulfillers in the regional distribution centers and other warehouses.

Major Learning Outcomes: Software Design Principles, Software Engineering. Multi-threading and synchronisation. Git, Maven and Gradle as tools used by all software developers. Learned how to write code cleanly.

Brief Description of working environment, expectations from the company: The company has a brilliant atmosphere for working. People are very friendly and help each other regardless of their commitments. The company treats interns and employees alike. It expects that the interns learn new things during the course of their project, whilst helping out the full-time employees as much as possible.

Academic courses relevant to the project: Object Oriented Programming, Software Engineering, DBMS, Operating Systems.

Name: Ridam Jain (2013B5A70841H)

Student Write-up

Short Summary of work done during PS-II: Worked on accessibility of web page, to make website more accessible for users with visual disability. Search engine optimization for better page ranking in google/bing search results. Worked on storeTimings class for displaying correct Open/Close status of a

Walmart store. Bug fixing during product release cycle. Data update pipeline development. Worked for Supply Chain Management tool to update the tech stack.

Tools used (Development tools - H/w, S/w): Eclipse, Python, Oracle DB, java spring, Git and Postman .

Objectives of the project: Store Finder Micro app.

Major Learning Outcomes: Product deployment cycle, Front end architecture, SEO, JavaScript, React.

Brief Description of working environment, expectations from the company: Working environment is good , but not much work is expected from you an intern, supporting environment and good learning experience. Need to be proactive to take up tasks.

Academic courses relevant to the project: OOPS, DSA, OS, DBMS

Name: Sourabh Bansal (2013B1A70421P)

Student Write-up

Short Summary of work done during PS-II: I created a full stack web application which would help in analytics of the 4 different algorithms for searching. I created scripts for modifying databases to make them GDPR compliant.

Tools used (Development tools - H/w, S/w): Eclipse, Python, Oracle DB, java spring, Git and Postman .

Objectives of the project: Improve and provide analytics on Grocery search

Major Learning Outcomes: Javascript, Node.JS, PL/SQL

Brief Description of working environment, expectations from the company: I got to work with a very dynamic team which helped me whenever I faced an issue. I witnessed how many teams work together to make a product.

Academic courses relevant to the project: Web Development, Databases

Name: Shreyansh Agrawal (2014AAPS0332H)

Student Write-up

Short Summary of work done during PS-II: I developed one of the widgets - Loading widget for their product - One-stop-dashboard which shows the details of delivery orders which are yet to be loaded in trucks at Walmart's stores. I did all the backend development of the widget using Java and few other frameworks. I developed End to End testing Automation for the component One-stop-dashboard which included the complete end to end flow testing automation that is from creating sample orders till dispensing them. This saved a lot of the team's time which used to be spent on QA testing, as now all the process was automated and manual regression testing wasn't required. For this also I used mainly Java, Restful Services and Swagger. I also developed the CI/CD pipeline and integrated it with all the components of my team. I mainly used Concord and Looper (Walmart's own platforms) for the integration. I also did little other integration such as Kibana and Splunk Integration.

Tools used (Development tools - H/w, S/w): Java, Spring, Jersey, Swagger, Informix, Active MQs, Apache Tomcat, Kibana, Splunk, Jenkins, Eclipse, Postman, SQL Workbench.

Objectives of the project: To develop Loading widget for One-stop-dashboard(team's component), develop API end to end Automation for One-stop-dashboard and to develop and integrate CI/CD pipeline with all components of the team.

Major Learning Outcomes: Got to learn Java backend application development, Automation testing, Continuous Integration and Continuous Deployments.

Brief Description of working environment, expectations from the company: The working environment at Walmart is quite good with perfect balance between work and life. The people at Walmart are quite supporting and helpful. Here everything is well organized and has a particular procedure whether it is work or anything else. One can expect a proper corporate world experience here. Overall it is a good place to work at.

Academic courses relevant to the project: Object Oriented Programming, Data Structures and Algorithms, Database Management Systems.

PS-II Station: Zendrive India Pvt Ltd, Bangalore

Student

Name: Abhishek Sharma (2013B2A70839P)

Student Write-up

Short Summary of work done during PS-II: Analyzing billions of miles and millions of drivers, Zendrive is the worlds largest and fastest growing mobile driver analytics platform. Zendrives solution is hardware free and uses inertial and navigation sensors in mobile phones (iOS and Android) to detect the driving patterns of millions of drivers across the world. Zendrive has a bunch of detectors running via SDK on iOS and Android platforms across the globe. Zendrive has mainly 3 teams in Bangalore office: Data Science, SDK, Backend team. I was in cdetectorlib team which is a part of Data Science team that implements the detectors in C++ by referring to the R code which has all the modeling done on huge driver dataset. The main objective for the internship was to successfully implement Collision Detection in C++ by referring to the R implementation. Along with this main project there were some small projects at the start of the internship just to get things started like Creating Python Wrapper for Walking Detector via SWIG (Simplified Wrapper and Interface Generator) tool, Implementing Interpolation (Linear and Spherical) and Decimation for the signal processing pipeline. After completing the Collision Detector I started working on some parts of Hard Turn Detector implementation in C++ and will finish it by end of the internship.

Tools used (Development tools - H/w, S/w): SWIG (Simplified Wrapper and Interface Generator), Qt Creator (C++ IDE), RStudio(R IDE), C++ libraries like boost, googleTest, csvParser, tinyxml, rapidJson etc.

Objectives of the project: Implement Collision Detector in C++ and release the detector by 2nd quarter which was done successfully. Improve signal processing pipeline and implement some parts of HardTurn Detector in C++

Major Learning Outcomes: Learned various aspects of software development programming in C++ along with writing some code in R and Python. Learned about Git which is widely used today in the industry as version control system. Along with these got know about various tools like SWIG, boost library, google-Test library etc.

Brief Description of working environment, expectations from the company: Working environment is one of the best I have seen. No restriction on your clothes, timing. Focus is entirely on completing the

work in specified time. The company is filled with lots of experienced people (PhD's, Masters) who have worked in some big companies around the globe in the fields of Statistics, Software Development, Machine Learning and more. I will surely recommend Zendrive to people who are willing to work in startup environment and want to learn from some of the smartest people around.

Academic courses relevant to the project: Data Structures and Algorithms, Object Oriented Programming, Machine Learning

Name: Kunal Todi (2013B3A70480P)

Student Write-up

Short Summary of work done during PS-II: I have developed an autoscaler to help improve the efficiency of cluster usage, increasing productivity as well as reduce overhead cost incurred by the company due to un-utilised resources. The autoscaler monitor the cluster time by time, takes decisions to increase or decrease the cluster instantly and acts on it as soon as it sees the need to. It takes care of unknown failures that could occur while doing that.

Tools used (Development tools - H/w, S/w): YARN, Spark, PostgreSQL

Objectives of the project: AWS Cost Cutting and Job efficiency

Major Learning Outcomes: Teamwork, meeting deadlines, real-world deployments and dealing with issues.

Brief Description of working environment, expectations from the company: Work is given more priority than time. You are given freedom to adopt any technology and work with new ones in your production. People are helpful to resolve the issue. Open culture which allows you to discuss other things too.

Academic courses relevant to the project: Parallel Computing, Data Structures and Algorithm , Database Systems.

Name: Deepanshu Gupta (2013B2A70850P)

Student Write-up

Short Summary of work done during PS-II: I have implemented a new data handling system in android. The project aimed to remove the dependencies from local database to store logs into files. The file system also provides better optimization of storage space as SQLite reserve the space when the data is deleted but in file system when the file deleted, the space is available for usage. The shifting of logs to file based system was also to reduce the number of repetitive field columns in local database. As build number , device version , device type etc. are some of the common fields in logs and component method, component class, message etc are particular to logs so common fields are classified into log header and will be written on top of the file and logs containing fields particular to log will be written on file separated by newline character. The new system will also reduce the processing cost as logs will be uploaded to an api directly instead of sending initially to web server which sends the logs to the api. As now files are stored in directory specific to its type of log, it will also provide a feature to customize uploads for each log level. The project also have a customized feature to cleaning logs as they are stored differently.

Tools used (Development tools - H/w, S/w): Android, Java, Python

Objectives of the project: To reduce the dependency of main database and cost cutting

Major Learning Outcomes: Teamwork, building system for real world scenario and meeting deadline for releases

Brief Description of working environment, expectations from the company: Working environment is good. No strict timing issues. You are given freedom to adopt any technology and work with new ones in your production. People are knowledgeable and helpful. Being an startup you can also learn about marketing etc.

Academic courses relevant to the project: Data structures and algorithm.

PS-II Station: Zeotap India Pvt. Ltd., Bangalore

Student

Name: Kshitij Gandhi (2013B1A70858P)

Student Write-up

Short Summary of work done during PS-II: The main aim of the project is to build a validation framework for API. The framework has two different libraries. The first library helps in getting an API response from the server based on the API call details. It also helps in validating the API response based on different parameters. The other library helps in storing the test suite results in Elasticsearch database. There is a UI which helps in easy debugging process.

Tools used (Development tools - H/w, S/w): Java, TestNg, Elasticsearch, AngularJS

Objectives of the project: Develop a Java based framework which validates API response. Once the test cases are run using the framework, an email is sent to all concerned members of product about the detailed explanation of test cases, marking cases as passed or failed. The framework uses libraries like OKHTTP3 and TestNg. After completion of test suite, the results are saved in Database (Elasticsearch). There is a UI built in Angular JS to ease debugging process.

Major Learning Outcomes: Learned OOP, Databases - Druid, Elasticsearch, RDBMS, Java.

Academic courses relevant to the project: Java, OOP, Databases

Name: Anil Menon (2016H1490225P)

Student Write-up

Short Summary of work done during PS-II: End-end Manage ZAT- revenue generating product of Zeotap, understand Insight workflow and recommend improvements. App Usage Automation. Nature of work involved active brainstorming with different stakeholders, introducing new features and products for better user experience and revenue generation, minimize operational efforts by effectively pursuing automation wherever possible and provide a seamless service to end user.

Tools used (Development tools - H/w, S/w): Ms Office, Postman, Google Adwords

Objectives of the project: Understand Zeotap product, workflow of Targeting - major revenue generating product, oversee the development; bring in innovative solution working in cohorts with Engineering and Sales team.

Major Learning Outcomes: Learning: Understood business, marketing and technical aspects of product management with respect to Ad-tech Industry

Brief Description of working environment, expectations from the company: Nice working environment, employee friendly. You can see the work that you do go live.

Academic courses relevant to the project: Product Management.

PS-II Station: Zynga Game Network India Pvt. Ltd., Bangalore

Student

Name: Suyash Kumar (2014A7PS0053P)

Student Write-up

Short Summary of work done during PS-II: I worked with the Game Services team which creates common backend services that all the games can use, such as services providing for in-game messaging, in-game group management, in-game leaderboards etc. I worked with the Compliance team that was creating a service to be compliant with the GDPR(European Union's Data Privacy Act).

Tools used (Development tools - H/w, S/w): S/W - Go, Amazon S3, MySQL, Splunk, Zookeeper ; H/W - Macbook Pro.

Objectives of the project: To assist in the creation of a service that can collect and aggregate all user data across all Games and Services and present it in a user-friendly manner, and provide for deletion of the data as well according to the terms and conditions of the GDPR Act.

Major Learning Outcomes: Go, Web Development, Good Coding Practices, Microservices Architecture, Scalability.

Brief Description of working environment, expectations from the company: The company has an open work environment (no cubicles), everyone from the intern all the way up to the project manager of the team work together. The environment is rather informal, with people constantly making jokes and talking as they work together-good bonding. Company provides lunch and snacks for free, and the food is of very high quality. On each of the floors, there is either an Xbox One or PS4, along with foosball, table tennis, pool etc. Company also provides good team outings to arcades and five star hotels.

Academic courses relevant to the project: Object Oriented Programming, Database Systems, Operating Systems.

Domain: Biological Science

*PS-II Station: Beckman Coulter (formerly ReaMetrix India P Ltd),
Bangalore*

Student

Name: Sreemanjari Kandhasamy (2014A5PS0813H)

Student Write-up

Short Summary of work done during PS-II: The work included the verification and validation of the product Duraclone Tri-T-Stat on the Flow cytometer, Dxflex at beckman coulter.

Tools used (Development tools - H/w, S/w): Flow cytometer.

Objectives of the project: verification and validation of the product Duraclone Tri-T-stat on Dxflex.

Major Learning Outcomes: Working principle and usage of flow cytometer, Various techniques of blood based assays, various experiments for the product launch.

Brief Description of working environment, expectations from the company: The working environment is friendly. Prior knowledge about the immunology and the flow cytometry is expected.

Academic courses relevant to the project: Molecular biology and immunology

PS-II Station: belong.co, Bangalore

Student

Name: Neel Jambhekar (2013B4A30425G)

Student Write-up

Short Summary of work done during PS-II: Worked on NLP projects using Deep Learning.

Tools used (Development tools - H/w, S/w): Python, Keras, Numpy.

Objectives of the project: Email content Understanding.

Major Learning Outcomes: Deep Learning concepts like LSTM, multi-processing, celery etc.

Brief Description of working environment, expectations from the company: The work in Data and Search is pretty great for someone looking to do work in ML / Data Science. Not a lot of expectations are set from the start and everyone is really friendly and helping. You can pick up a lot of skills working here if done seriously. PPO is not guaranteed though since its a startup.

Academic courses relevant to the project: Neural Networks and Fuzzy logic, Machine Learning , DBMS etc.

PS-II Station: Central Leather Research Institute (CLRI), Chennai

Student

Name: Sneha Mahesh (2014B1PS0969P)

Student Write-up

Short Summary of work done during PS-II: Preparation of nanofibers to encapsulate siRNA and drug to serve as a targeted delivery system for colon cancer therapeutics. The nanofibers were characterized and standardized using various protocols. It's bio compatibility was assessed by MTT, Haemolysis and other assays. Molecular biology techniques were used to analyse the anti cancer and apoptotic efficiency of the drug in a particular cell line.

Tools used (Development tools - H/w, S/w): Machines used: Electrospinning, UV Spectrophotometry, FACS, Fluorescence and phase contrast microscopy, sonicator, lyophiliser, PCR, Software: Autodock

Objectives of the project: To choose an ideal polymer for treating colon cancer, To encapsulate the selected drug in the polymeric system, To physico-chemically characterize prepared nanofiber system, To check the targeted release of drug with in-vitro release kinetics, To check the in-vitro anticancer activity of the prepared nanofiber and investigate its mechanism of cell death.

Major Learning Outcomes: 1. Exposure to a typical research setting 2. Got exposed to a lot of Molecular biology techniques and had a hands on experience 3. Learnt to work on my own in a research environment 4. Learnt handling quite a few sophisticated machines 5. A great experience to work fundamentally on all concepts learnt in all the courses taught.

Details of papers/patents: Currently working on a manuscript extended from this project.

Brief Description of working environment, expectations from the company: CLRI is very friendly and accommodating to BITS students. They let us work on an ongoing project which gives us a direct exposure to the industrial setting. The lab I worked in provided me a lot of freedom to learn things at my own pace and were always ready to help whenever required. They also let me observe the work of research fellows, in addition to the one I was working with to give me an exposure to various other assays. If students are willing to put in effort enthusiastically, they respond in a similar manner.

Academic courses relevant to the project: BIOT F422 Nanobiotechnology, BITS F416 Introduction to Nanoscience, BIOT F423 Drug design and delivery.

Name: Hridhay M (2013B2A80732P)

Student Write-up

Short Summary of work done during PS-II: I worked in the research area of computational chemistry under the guidance of Dr. V. Subramanian, Chief Scientist, Centre for High Computing. My project involved learning to work with linux based operating system, various open-source cheminformatics softwares and understanding Molecular Dynamics Simulations (MD). I have proposed novel molecules to target the paclitaxel binding site of beta-3-tubulin and thereby interfere with microtubule dynamics and cause apoptosis. I screened the chemical databases to identify potential leads. Then I added substituents to see if the activity can be enhanced. For this, I used virtual screening tools. Lastly, I performed MD simulations to understand the mode of inhibition and comparison of activity with a reference molecule, IDN5390.

Tools used (Development tools - H/w, S/w): AmberTools17, ChemDraw Professional 17, Marvin Sketch, GROMACS, AutoDock Vina, OpenBabel, ASUS ROG GL-552VW laptop.

Objectives of the project: To propose novel molecules which target paclitaxel binding site of beta-3-tubulin and display enhanced activity compared to IDN5390.

Major Learning Outcomes: Working with linux operating system, learning to use cheminformatics softwares, understanding the approach to a computational chemistry problem, which is distinct from the approach to a synthetic chemistry problem. Getting better insight into medicinal chemistry and cancer.

Brief Description of working environment, expectations from the company: The working environment in CSIR-CLRI is fantastic. It being a government research facility, it is equipped with high end research infrastructure. The scientists have a flexible, result-oriented approach which translates to better working conditions, where students enjoy freedom and understand responsibility. There are lots of greenery and vegetation in the CLRI campus, which gives a pleasant atmosphere. The canteen is highly subsidized and provides excellent food.

Academic courses relevant to the project: Organic Chemistry & Drug Design, Introduction to Bioinformatics.

Name: Paras Luniyal (2016H1290003H)

Student Write-up

Short Summary of work done during PS-II: Studying the peculiar nature of mutant GFP chromophore and its biophysical properties.

Tools used (Development tools - H/w, S/w): UV-Spec. , Fluorescence Spectroscopy, FTIR, Circular Dichroism ,FPLC.

Objectives of the project: To Use mutant GFP-hs as a biosensor for differentiating normal and cancer cell.

Major Learning Outcomes: Purification Of Protein And Its Downstream Application.

Brief Description of working environment, expectations from the company: Work Environment is good and almost every instrument is available related to the field of Biotechnology.

Academic courses relevant to the project: Experimental Techniques.

PS-II Station: Centre for DNA Fingerprinting and Diagnostics, Hyderabad

Student

Name: Kanika (2016H1290004P)

Student Write-up

Short Summary of work done during PS-II: Pathogens employ a multitude of foolproof, clever strategies to invade the host and hijack their immune response, ensuing in colonization and infection. One such mechanism is the epigenetic modification of the host utilized by *Mycobacterium tuberculosis*. Recent studies from our laboratory have revealed mycobacterial proteins involved in modulation of the host epigenome. Rv1988, a secretory histone methyltransferase, localizes to the host nucleus and dimethylates the H3R42 residue in a non-canonical fashion. Another protein Rv2966c, a 5-methyl cytosine-specific DNA methyltransferase methylates cytosines in a non-CpG context. Interestingly, the host cell has also evolved a defense mechanism to combat infection. The host protein SUV39H1, a histone methyltransferase, translocates to the cytoplasm and trimethylates the histone-like mycobacterial protein, HupB. This has been shown to diminish the survival of the bacterium within the host cell. My project was based on characterizing the interaction between mycobacterial and host proteins. In the bigger picture, these findings will aid in deeper understanding of the dynamics of host-pathogen interactions and determining novel drug targets in *Mycobacterium tuberculosis*.

Tools used (Development tools - H/w, S/w): S/w : MEME tools - FIMO (Find Individual Motif Occurrences), SAMtools.

Objectives of the project: Characterization of the role of histone modifications during mycobacterial infection.

Major Learning Outcomes: Cloning, CFU assay, analysis of human genome datasets with software tools such as MEME tools (FIMO) and SAMtools.

Brief Description of working environment, expectations from the company: CDFD is dedicated to research in life sciences which implies working off-hours and even on weekends to suit the needs of an experiment. The continuous training process equips one to handle multiple experiments at once. PhD research scholars are highly encouraging and support thoroughly if one exhibits a learning attitude. I was fortunate enough to receive a collaborative opportunity to work at CSIR-CCMB for a duration of 3

weeks. This experience taught me to plan ahead and coordinate with colleagues at CDFD so as to manage seamless work at two different workplaces.

Academic courses relevant to the project: Genetic Engineering Techniques, Advanced and Applied Microbiology, Stem Cells and Regenerative Biology.

PS-II Station: Decision Resources Group, Bangalore

Student

Name: Mahesh Jaju (2016H1470184P)

Student Write-up

Short Summary of work done during PS-II: I support Global market access solutions team. Currently, I am working on extraction of Health technology assessment reports. Wherein, I interpret the results given in HTA reports and summarize all information in the given template. I extract HTA reports for 11 countries. This DRG product helps pharmaceutical companies to know whether their drug is recommended, rejected, or restricted for the reimbursement in a particular country. Pharmaceutical companies also get an understanding of reason(s) behind the rejection or restriction of their drug for reimbursement.

Tools used (Development tools - H/w, S/w): Context Matters tool.

Objectives of the project: (1) To know decision taken by HTA bodies regarding reimbursement of drugs
(2) To provide summary of drug clinical and pharmaco-economical data compared to the other available treatments or placebo

Major Learning Outcomes: Rules and regulation for reimbursement of drugs in different countries.

Brief Description of working environment, expectations from the company: Working environment in this company is good. You will get an appreciation from your manager even for your small contribution. People working here are very helpful.

Academic courses relevant to the project: Clinical research, Quality assurance and regulatory affairs.

Name: Gouri Shripad Chorghade (2016H1470186P)

Student Write-up

Short Summary of work done during PS-II: Learnt about secondary research for Labels, KOL identification, pipeline pull. Now currently I'm involved in a live project which uses our knowledge of pipeline pull assignment.

Tools used (Development tools - H/w, S/w): MS office, DRG platform.

Objectives of the project: To analyze potential market of any drug of a particular class. Preparing a dataset which will be helpful for analysis of that class of drug in the market.

Major Learning Outcomes: We got to brush up our Excel knowledge, learnt about oncology recent trends.

Brief Description of working environment, expectations from the company: Company environment is professional and taught us every little thing that to how to approach and etc. They never let us feel like we are interns and tried to involve in all things that the company was doing. Colleagues also encouraged us for our work also on personal front they were very helpful.

Academic courses relevant to the project: Clinical research, IPR.

PS-II Station: Decision Resources Group, Gurgaon

Student

Name: Mansi Deshpande (2016H1460193P)

Student Write-up

Short Summary of work done during PS-II: Firstly I got training on various aspects of secondary research like USFDA labels, KOL identification and mapping, pipeline pull, patent search etc. I got hands on training on live project. The live project is on Immune checkpoint inhibitors. The project included pipeline pull extraction and analysis on the clinical trials of immune checkpoint inhibitors. I handled around 2500 trials on Immune checkpoint inhibitors. Populating the clinical trials on the basis of stage of disease, line of therapy given, combination strategies used etc.

Tools used (Development tools - H/w, S/w): Microsoft office, Clinicaltrials.gov, Adis insights.

Objectives of the project: To populate the clinical trials of immune checkpoint inhibitors.

Major Learning Outcomes: The pipeline of various companies developing immune checkpoint inhibitors. Learning the difference between immune checkpoint inhibitors and other immunotherapies.

Brief Description of working environment, expectations from the company: The company is very professional in their conduct. The working environment is very good. Company treated me no lesser than an employee. The managers and mentors are very knowledgeable and always ready to help. We got facilities like cab service and were allowed to work from home in case of emergencies.

Academic courses relevant to the project: Clinical research ,Pharmacology ,Intellectual property rights.

PS-II Station: Dr Reddys Laboratories, Visakhapatnam

Student

Name: Amarjeet Kamal Gupta (2016H1460195P)

Student Write-up

Short Summary of work done during PS-II: I was responsible for development and validation of analytical method for X using HPLC also laid down statistical procedures for method procedure validation.

Tools used (Development tools - H/w, S/w): Empower 3.

Objectives of the project: Method development and validation for detergent and lay down Statistical Method for Validation of analytical method procedure.

Major Learning Outcomes: Well, I have learned so many things here, application of all those things we studied theoretically back in class room, though we are not allowed to handle instrument because of company policy but I have observed all those things and had an active role in technology transfer process of different APIs and Dosage form (mostly oral solids). Thanks to my guide here, Sir is so helpful and allow me explore Lab and always motivated me to learn as much as I can. If you talk about major learning and output of this PS, here, being a part of this organization, I have learned about management, planning, Technology transfer, different analytical instruments that include LC-MS, HPLC, GC etc. I can say everything you learn here is major which could help in future.

Brief Description of working environment, expectations from the company: Working environment is good here, they don't put much stress on employees, peoples here are very helpful and explain your doubts pretty well, I have worked with technology transfer team, they were so helpful and helped in learning all those process.

Academic courses relevant to the project: All those selective courses like Bio-statistics, quality assurance and RA, DFD, Analytical method of analysis was very helpful.

Name: Aniket Avinash Kulkarni (2016H1460190P)

Student Write-up

Short Summary of work done during PS-II: In PS-II I am working in Department called MSAT (Manufacturing Science and Technology) Its Department which is involved in Technology Transfer of formulation. During PS-II i came across various scale aspects for drug formulation products on different manufacturing equipment's and how they are optimized based on batch size. The equipment's which i learned about includes. Fluid bed Equipment (from 125 Lit- 1800Lit), HSMG (250Lit-800Lit) Tablet compression machine(Double and single rotary), Tablet Coating Machine(250Lit-700Lit),Tablet imprinting

Tools used (Development tools - H/w, S/w): MS excel MS word Adobe Reader.

Objectives of the project: To learn about how to achieve Effective Technology Transfer.

Major Learning Outcomes: Learned about troubleshooting during tech transfer.

Brief Description of working environment, expectations from the company: Working environment is good.

Academic courses relevant to the project: Drug Formulation development, Quality assurance and Regulatory Affairs, Advance Physical Pharmaceutics.

PS-II Station: Dr. Reddys Laboratories, Hyderabad

Student

Name: Vinayak mharugde (2016H1460191P)

Student Write-up

Short Summary of work done during PS-II: My internship is in formulation research and development of injectables. My project is development of low dose peptidal injection. In the whole project i learn how to develop generic product What kind of problems will come and how to overcome them.

Tools used (Development tools - H/w, S/w): Manufacturing vessel.

Objectives of the project: Development of peptidal hormone injection and make it commercial by generic filing.

Major Learning Outcomes: Generic product development process.

Brief Description of working environment, expectations from the company: Good facilities and supporting teams.

Academic courses relevant to the project: DFD, ADDS.

Name: R. Shiva Kumar Reddy (2016h1460064H)

Student Write-up

Short Summary of work done during PS-II: Worked in R&D (Formulation R&D) for 5 months in the product selection department. it is a bridge between marketing team and formulation scientists. There will be daily tasks to know about the innovator formulation and to check the possible ways to make generic version of formulation. In R&D i have done 3 projects. 2 are individual and 1 is in group. worked in production department for a month were i have learnt the operating techniques of various equipment in manufacturing area like rapid mixer granulator, Fluidized bed equipment, Compression machine, Coating machine. Here, i have done two projects. Totally, i were involved in 5 technical projects.

Tools used (Development tools - H/w, S/w): Electronic tongue or Artificial tongue (E-Tongue), HPLC, Dissolution Apparatus, rapid mixer granulator, Fluidized bed equipment, Compression machine.

Objectives of the project: The Objective of my Project is to Mask the Unpleasant taste of the formulation using taste masking agents and analyzing taste using E-Tongue.

Major Learning Outcomes: Got a good opportunity to learn & handle of new instrument i.e E-Tongue. This instrument is New to Pharma company. i never heard about this instrument name before coming to Dr. Reddy's Laboratories.

Brief Description of working environment, expectations from the company: Working Environment is quite good and very friendly as well as professional people around us. Expected a Employment opportunity (PPO) but there are no any vacancies. i would like to suggest my juniors to covert their PS in the 2-1 Semester because manipal university students are pursuing their internship in the year 1st semester and they are filling the job opportunities.

Academic courses relevant to the project: Dosage Form Desig, Instrumental Method analysis, Pharmacokinetics & Clinical pharmacy.

Name: PEDDHOLA BHANUCHANDER (2016H1470187P)

Student Write-up

Short Summary of work done during PS-II: My Internship is in Analytical Research and development, Here in AR&D Analytical method development and validation studies will be carried on by using various analytical techniques. Such as HPLC, UPLC, GC etc.

Tools used (Development tools - H/w, S/w): : 1. Empower for HPLC and GC 2. Spectra for IR 3. Tiamo for KF Titration 4. Electronic Lab note book.

Objectives of the project: To develop analytical method of API and validate it with suitable parameters

Major Learning Outcomes: Importance of Analytical method development in the drug development process. Steps involved and process for developing Analytical Method. Handling of various analytical Instruments. Software's for using the analytical techniques.

Brief Description of working environment, expectations from the company: working environment in company is good the scientists who are going to work here are really helpful whenever we have any doubts they will help us.

Academic courses relevant to the project: Instrumental Methods of Analysis (IMA), Quality Assurance and Regulatory Affairs.

Name: Cheerla Krishna Deepthi (2016H1460059H)

Student Write-up

Short Summary of work done during PS-II: Understanding the unit processes in the product development. Equipment handling and usage, Scientific approach in solving a bottle neck for development of the product.

Objectives of the project: To develop a formulation which matches or shows bioequivalence with RLD.

Major Learning Outcomes: Fair understanding about the product development.

Brief Description of working environment, expectations from the company: The working environment is conducive giving a platform to learn.

Academic courses relevant to the project: Dosage form Designing.

Name: MALLADI MNL MUKUNDA (2016H1080181P)

Student Write-up

Short Summary of work done during PS-II: In the present era of drug discovery, it is accepted that not merely chemical purity/integrity of the APIs is the sole dependable and formulation influential parameter. The physical arrangements of the constituents in the crystal lattice have immense potential to influence the physicochemical properties of the drugs and subsequently the therapeutic outcomes. Therefore, the study of polymorphic forms has become as important as any other branch of Pharmaceutical sciences, as it helps to embark upon the proper selection of API. This understanding thus helps to enhance the potency, as desired. To study these minute transitions myriad of analytical

techniques are available. Simple spectroscopic techniques like FT-IR and PXRD can be of the utmost importance. The characterization of the polymorph is to be done followed by the continuous stability analysis and the form that passes the set criteria shall be carried over to further product development stage. Many drugs are still unexplored and offer a huge scope for further research.

Tools used (Development tools - H/w, S/w): : Equipment's used: Powder X-Ray Diffractometer, FTIR-Spectrometer, Karl Fischer Instrument, High Performance Liquid Chromatography (HPLC), Differential Scanning Calorimeter (DSC), Thermogravimetric analyzer (TGA) Software: High Score plus, Data collector, Spectrum, Tiamo, Empower 3, TRIOS , TA Universal Analysis.

Objectives of the project: The aim of the present study is to perform the characterization of an API Polymorph, followed by, study the stability of API polymorph for 3 months. The main objective of the present study are to: To perform the characterization of API polymorph using the common characterization techniques like Powder X-Ray Diffraction (PXRD), Fourier Transform Infrared Spectroscopy (FTIR), Differential Scanning Calorimetry (DSC) and Thermogravimetry Analysis (TGA). To carry out the initial analysis of API polymorph, that includes, PXRD, FTIR, Moisture content analysis, Purity determination, Solvate content determination. To decide the packaging container for the stability study of API polymorph, by performing stress study, that includes, Hygroscopic study, Compression Study, Accelerated stress study, Thermal study and UV exposure study for a specified period of time. To pack and load the API polymorph for the stability study in various conditions as specified in guidelines. To collect the stability samples from the stability cell at periodic time interval and carryout the analysis, that includes, PXRD, FTIR, Moisture content analysis, Purity determination and Solvate content determination.

Major Learning Outcomes: 1. Hands on experience in various analytical techniques like HPLC, GC, Karl Fischer Titration, FTIR spectroscopy, PXRD.2. Stability Packing and analysis of Various API polymorphs.3. Solubility studies 4. Strategies of API Polymorphs development.

Brief Description of working environment, expectations from the company: Its an enriching experience to be a part of Dr. Reddy's as an intern. Can-do, go-the-extra-mile and win-win attitudes are evident. Safety of the employee is of utmost importance and proper measures are taken to achieve the same. supportive and employee free work culture. This internship has sharpened my technical skills. organization has reached my expectations. Improved my professional and technical skills. Mentors were very supportive and their guidance was valuable for my career growth.

Academic courses relevant to the project: Instrumental Methods of analysis (IMA)

PS-II Station: Ecozen Solutions (P) Ltd., Pune

Student

Name: Sugun Tej Inampudi (2014A4PS0417P)

Student Write-up

Short Summary of work done during PS-II: In Ecozen Solutions I worked as Thermal Test Engineer. A designer/developer proposes new changes to an already established design or product. As a test engineer it is my responsibility to see whether the new design works as claimed by the designer. I will have to look into the different ways that design or material can fail. For this testing I have to design experiments. The experiments should be designed after consulting the designers and the production team. Currently the entire R&D division is focused on a new product Ecofrost V3.0 which will be a complete new design. Since this type of technology is not being used elsewhere in the country, the testing of the proposed designs is a very crucial. I worked on feasibility of HDPE as TES storage container, selection of new flooring material, thermal conductivity estimation of EPS and estimation of required flow rate to achieve precooling.

Tools used (Development tools - H/w, S/w): Anemometer, pressure differential, temperature sensors, python.

Objectives of the project: Feasibility of HDPE as TES storage container, selection of new flooring material, thermal conductivity estimation of EPS and estimation of required flow rate to achieve precooling.

Major Learning Outcomes: Design of various experimental procedures, conducting the experiments, evaluating results.

Brief Description of working environment, expectations from the company: You will feel part of the R&D team. The work done by you will be valued. The company expects you to be regular and transparent. You should be ready to work out of your comfort zone. This PS station is highly recommended for people interested in Thermal sciences.

Academic courses relevant to the project: Heat transfer, Refrigeration and air conditioning.

Name: Aniket Lad (2014A4PS0366P)

Student Write-up

Short Summary of work done during PS-II: Components selection for refrigeration system components, development of simulation models for system performance, estimation of solar PV generation data.

Tools used (Development tools - H/w, S/w): MATLAB, Python.

Objectives of the project: Selection of efficient and cost effective system components optimizing performance.

Major Learning Outcomes: Better learning of working of refrigeration system components, refinement of programming skills.

Brief Description of working environment, expectations from the company: Good working environment, unconventional as compared to large scale companies, flexible working hours and supporting team members.

Academic courses relevant to the project: Refrigeration and Air Conditioning, Heat Transfer, Solar Thermal Process Engineering.

PS-II Station: Hindalco Innovation Centre - Semifab, Talaja, Mumbai

Student

Name: Nishant Chandrashekhar (2014A4PS0357G)

Student Write-up

Short Summary of work done during PS-II: The aim of the project was to automate the post-processing in HyperView software, through TCL programming. The post-processing was part of FEM-simulation of extrusion process. Initial stages of the project involved getting acquainted with TCL by solving small assignments. The extrusion process flow which is followed in the manufacturing plants was understood along with the simulation. On understanding the simulation, especially the post processing, the automation program could be written. Once the program was written, extrusion simulations were carried out and the solver files of the simulation were fed into the automation program to see if the automation worked. It worked and additional features were also added like error handling.

Tools used (Development tools - H/w, S/w): Tool Command Language (TCL), HyperXtrude, HyperView.

Objectives of the project: Achieve automation of post processing carried out in HyperView.

Major Learning Outcomes: Learning Outcomes: Programming, FEM simulation using commercial package.

Brief Description of working environment, expectations from the company: Since my project mainly involved programming and conducting post processing, I was given a desktop at Hindalco Innovation Center (HIC) to work on. Breakfast, lunch and evening snacks were provided by the organization. Bus facilities was also provided. The mentor was very helpful and made all the necessary arrangements to have a smooth experience at the organization. One must reach earlier so as to not miss the breakfast which is served from 8:45-9:00. In summary, the work environment was good although timings are to be strictly followed in case you are dependent on the organization for the food and commute.

Academic courses relevant to the project: CAD, Computer Programming.

PS-II Station: IMS Health, Bangalore

Student

Name: Arun kumar (2014D2PS0984P)

Student Write-up

Short Summary of work done during PS-II: We learn lot of things from here. Now, I am perfect in excel. There are some of the tools which I learned from here like think cell, trending tool etc. Also, I learned how we do the secondary research. So, there is different - different way of secondary research. So, I started my work with trending tool. This tool is used for the finding the future values of the data. This is based on the three things level, trend, decay. After that I made a one model in excel. After that I did the quality check(QC) of the model. I put the assumptions in model and match the values. Also, I made the slides based on the epidemiology model. This is all about my work.

Tools used (Development tools - H/w, S/w): Trending tool, Think Cell.

Objectives of the project: The objective of the project is Establish sales forecast data within EU-28 over a 5year time horizon and Provide individual forecasting data across diabetes, oncology, and autoimmune disease.

Major Learning Outcomes: i learned lot of things from here. now i am perfect in excel and some of the tools which we are using here and also i can make the models in excel with the help of VBA.

Brief Description of working environment, expectations from the company: The working environment is good everyone is helpful they explain you in proper way. There are some of the functions are celebrate here. Also, we celebrate the birthday. The company wants the work from you and that work must be in proper , clean way and also you have the communication & written skills and your skills will reflect your work . Package and Designations will be depends on the your over all performance.

Academic courses relevant to the project: Market Research.

PS-II Station: IMS Health, Gurgaon

Student

Name: Paras Vohra (2016H1490209P)

Student Write-up

Short Summary of work done during PS-II: Beginning with understanding the work on International reference pricing system for global healthcare market and performing intensive secondary research for good number of projects like Fair market value of a country for HCPs, I have been working on the project on Diabetes Insights since first week of April. Here i have prepared transcripts sheets to analyze and taking out the insights from this analysis to prepare reports for different drugs categories to cure diabestes and related use of them by physicians in different countries.

Tools used (Development tools - H/w, S/w): Advance Excel, Ms-office, Ms-PowerPoint, Secondary Research.

Objectives of the project: 1) To identify asthma centres in EU5 and Nordic country using special and advance therapies. 2) To prepare report of the drawn insigts from analysis sheets of diabetes insights.

Major Learning Outcomes: Time Management, Qualitative data analysis, Quantitative data charting, Use of Excel formulas, Prepare reports.

Brief Description of working environment, expectations from the company: Informal environment with everyone, some sports and games available for stress removal, free snacks and tea/coffee all the time with subsidized food. Everyone is very approachable and helpful in every ways. PPO percentage was around 60% till previous year but no information for this year till now. Could have provided little greater stipend. We work like as full time employees and not as intern to be true. One thing to consider, no trainings available.

Academic courses relevant to the project: Marketing Research

Name: Chinmay Sharma (2016H1490214P)

Student Write-up

Short Summary of work done during PS-II: My work was focused on studying the market trends of drugs in different countries for different indications and then analyzing and predicting the future trends. It also involved making excel based dashboards and presentations.

Tools used (Development tools - H/w, S/w): MS - Excel, MS - Word, MS - PowerPoint, Internal IMS Software tools.

Objectives of the project: To forecast the future sales values.

Major Learning Outcomes: Understanding how forecast works and analysing the market trends.

Brief Description of working environment, expectations from the company: The working environment is really awesome, all people including seniors are amiable and make you feel like an employee.

Academic courses relevant to the project: Marketing Research.

Name: Monika Jindal (2016H1080176P)

Student Write-up

Short Summary of work done during PS-II: With the help of secondary desk research and database analysis, prepared various reports of OTC drugs across 55 countries.

Tools used (Development tools - H/w, S/w): Excel, Powerpoint.

Objectives of the project: To make client understand the OTC market of their competitor or the region where they want to get established.

Major Learning Outcomes: Market research, data analysis, report making.

Brief Description of working environment, expectations from the company: Healthy work environment, no bossy culture, manager available to resolve the doubt, flexible working hours.

Academic courses relevant to the project: Pharmaceutical Administration and Management, Quality Assurance and Regulatory affairs.

Name: Barkha Bhagwani (2016H1470183P)

Student Write-up

Short Summary of work done during PS-II: Working with oncology team and handled various live projects such as cancer center affiliations, prediction of biomarkers from clinical trails, biosimiliars market trend analysis. Trained on oncodynamics database. Prepared reports for different companies using different the above database.

Tools used (Development tools - H/w, S/w): Microsoft Excel, Powerpoint presentation.

Objectives of the project: Analysis of market of oncology drugs.

Major Learning Outcomes: Learned new tools in excel & powerpoint. Skilled in secondary research & data analytics.

Brief Description of working environment, expectations from the company: Environment is good.

Academic courses relevant to the project: IPR & pharmaceuticals, Quality assurance & Regulatory affairs

Name: Bharti Shivran (2014B2PS0955P)

Student Write-up

Short Summary of work done during PS-II: List down the drugs related to cancer, sickle cell, and other diseases. Comparing the Prices, Dosage, Forms, Indications of drugs in different countries.

Tools used (Development tools - H/w, S/w): Office tools were used. Mainly Excel.

Objectives of the project: To do Pricing of the Drugs.

Major Learning Outcomes: Learnt new tools in Excel and PowerPoint. Skilled in sales and marketing.

Brief Description of working environment, expectations from the company: Working environment of the company is excellent. We can reach out to team seniors easily. But the commitments which were given by the company in initial phase were not fulfilled.

PS-II Station: Kinapse Ltd, Gurgaon

Student

Name: Deepak (2016H1460198P)

Student Write-up

Short Summary of work done during PS-II: I was working with the HEOR (Health Economic Outcome Research) Team. We use clinical and Economical evidence to determine the value of Drugs and look at the factor that can affect this. we were engaged in doing Systematic literature review, targeted literature review and real world evidence. We build data system that is used by market access professional to determine the price of drug.

Tools used (Development tools - H/w, S/w): we used only pub med, Medline, Cochrane to search our articles of interest.

Objectives of the project: To determine the Value of drugs in current market.

Major Learning Outcomes: I remain updated with all the pharma market and as it was my first internship i know how to work in team and complete projects before deadlines.

Brief Description of working environment, expectations from the company: Environment here in kinapse is awesome. Every person whether he/ she is manager, consultant or analyst was easily approachable and they were always ready to help us.

Academic courses relevant to the project: Clinical Research, Advanced pharmacology.

Name: LAVISH DAROLIA (2016H1460189P)

Student Write-up

Short Summary of work done during PS-II: The objective of the current targeted literature review (TLR) was to understand the published evidence on the burden of COPD across the world. A robust search strategy was prepared to understand the burden of COPD. Literature search was conducted using subject headings. Initial searches yielded 5620 citations: of which 120 duplicate citations were excluded. After screening titles/abstracts for relevance on the basis of inclusion/exclusion criteria (first pass

screening), 4950 studies were excluded. Following which, 550 full text papers were assessed for eligibility (second pass screening). Overall, a total of 60 studies was considered for the data extraction.

Tools used (Development tools - H/w, S/w): Microsoft excel.

Objectives of the project: To find out the burden of COPD across the world.

Major Learning Outcomes: Systematic literature review and targeted literature review.

Brief Description of working environment, expectations from the company: The work environment of the company is very nice. I found it one of the best place to work. Employees are very supportive and helpful.

Academic courses relevant to the project: Epidemiology, Clinical research.

PS-II Station: National Centre for Biological Sciences, Bangalore

Student

Name: Kartik Bhargava (2016H1290006P)

Student Write-up

Short Summary of work done during PS-II: With the development of Gendis+, a compendium of sequence domains of evolutionarily related proteins grouped at the superfamily level, the data linking protein domain superfamilies with their homologues is ready. It is possible to obtain links between structural hierarchy and taxonomic levels at Gendis+. The database creates a framework for a systematic survey and analysis of various structural superfamilies. In the GenDis+ database, an additional feature for full-length alignment of protein superfamilies has been provided along with phylogenetic trees for each superfamily. The insect pheromone/odorant binding protein superfamily was chosen as an example to study and understand the evolutionary and functional relation between the members of the superfamily.

Tools used (Development tools - H/w, S/w): 1. Programming languages and packages (Python, CSS, jQuery, DataTables, Bootstrap, HTML). 2. Robo3T (MongoDB) 3. CD-Hit 4. MAFFT v7.9 5. Clustal Omega 6. iTOL 7. Jalview 8. OD-seq.

Objectives of the project: Genome-Wide Distribution Of Taxonomic And Domain Architectural Variations Amongst Homologues Of Protein Domain Superfamilies: Phylogenetic Analyses And Towards Structure Determination Of Specific Examples.

Major Learning Outcomes: 1. Development of web server for a biological database 2. Creating and handling the alignments of a large number of protein sequences 3. Creating and handling the phylogenies of a large number of protein sequences 4. Taxonomical and functional annotation of Insect pheromone/odorant-binding proteins.

Brief Description of working environment, expectations from the company: The environment is good and work-friendly. The lab members and colleagues are supportive, cooperative, and knowledgeable. The work hours are flexible.

Academic courses relevant to the project: Application of Comp and Stat in Biology.

PS-II Station: Pfizer Ltd., Chennai

Student

Name: Rajarajeshwari (2016H1460194P)

Student Write-up

Short Summary of work done during PS-II: Regulatory Affairs (RA) is a profession which acts as the interface between pharmaceutical industry and drug regulatory authorities across the world. It is involved in every stage of drug product life cycle. Manufacturers often need to make changes such as increasing batch sizes, adding new manufacturing facilities to expand patient access, improving analytical methods, and increasing process robustness as companies gain experience in commercial manufacture and testing. Before changes are implemented, manufacturers must assess process risks and generate data to confirm that there is no adverse impact on product quality. Manufacturing site transfer project involves other changes also and hence, becomes complex; it is very important to ensure that appropriate regulatory strategy has been developed to determine the number of submission batches, advantages of selecting of NDA Vs ANDA for the lead application, bundling of applications, for line transfer etc. It is also equally important to have agreed upon strategy with the regulatory agency, so that the organization and the agency are aligned on filing category and data set requirements which are very important in securing timely approval/commercial launch of the products. . It should pay more attention to optimize their technology transfer process to ensure the rapid and successful introduction of products to new site. Technology transfer can be considered successful if a receiving unit can routinely reproduce the transferred product, process or method against a predefined set of specifications as agreed with a sending unit and/or a development unit.

Tools used (Development tools - H/w, S/w): Literature review was performed on the regulatory requirements for post approval changes in parenteral products. Typically from regulatory guidelines published officially by authorities, organization internal resources, online books, journals, research reports etc. Information was collected using search engines like Science direct, Google scholar etc.

Objectives of the project: The objective is to understand the regulatory requirements for post approval changes in USA for complex site transfer project for parenteral products manufactured by aseptic filling and terminal sterilization.

Major Learning Outcomes: Roles and responsibilities of Regulatory Affairs professional. Drug approval process and types of applications in US market. Types of changes for an approved product and

categories to report them. Strategies to be developed to meet the requirements of regulatory agency when there is inclusion of alternate manufacturing site.

Brief Description of working environment, expectations from the company: The PS-II opportunity I had with Pfizer was a great chance for learning and professional development. It was gratifying, challenging, and a total learning experience. This experience has prepared me in a number of ways from office etiquette, to working with deadlines, to gaining knowledge. My project mentor was helpful who took time from his busy schedule and clarified my doubts and helped me in all the time of project work and colleagues were friendly, guided me immensely in executing my project. Also, I had training sessions and visit to multiple sites of the organization which helped in better understanding of importance of regulatory affairs in every stage of drug product development. The company took care of my transportation and also provided flexible working hours. A good work culture and the environment gave me many memories to carry with. This internship gave me an opportunity to learn most valuable skills like the ability to speak with people in a professional setting, networking with people, taking criticism, responsibility, and confidence.

Academic courses relevant to the project: Quality assurance and regulatory affairs.

Name: Sheetal Raut (2016H1460196P)

Student Write-up

Short Summary of work done during PS-II: I carried out my PS-II in regulatory affairs department in Pfizer, Chennai. Regulatory Affairs is a unique mixture of science and management to achieve a commercially important goal within a drug-development organization. The project allotted to me was titled "Regulatory requirements for combination products in US & Europe markets". Combination products are a result of an innovative thinking which combines drug, device and biologic in suitable way. The rationale for any combination of medicinal products is to enhance safety and efficacy of the final product. The advantage which these products bring in is based on combined properties to achieve the intended therapeutic action. In US these products are governed by well-defined regulations whereas in Europe, these products are not even defined properly. This project is focused on getting a regulatory overview for combination products in US and Europe markets. It focuses on understanding of combination products, jurisdiction of these products, their regulatory approval process, GMP

requirements in US and Europe along with challenges which are generally faced throughout the life cycle of these products.

Tools used (Development tools - H/w, S/w): Methodology adopted for this project up to this stage of project is mainly literature survey from renowned research and review articles, Regulatory agency's websites. Information collected was analyzed to develop a regulatory strategy for combination products.

Objectives of the project: 1.To understand the regulations for combination products in US & Europe markets. To understand the regulatory frame work for approval of combination products in US and Europe markets.

Major Learning Outcomes: Firstly by completing this project as being a part of Pfizer gave me a basic understanding of field of regulatory affairs. From this project I have gained insights into combination products regulations in US & Europe. The project assigned to me was a tool for the company to get more expertise in the area of combination products. It was a good exposure to work on this project alongside the experts assigned. This project helped in getting a technical exposure in the area of regulatory affairs, which was a great opportunity.

Brief Description of working environment, expectations from the company: Pfizer provided a good exposure to a professional working environment. Pfizer provided a good platform to learn from the experienced mentors through various learning programmes. Pfizer strongly believes in giving equal opportunities for all to progress and even helps employees in overcoming any obstacles and setting goals and attaining them. Being a part of Pfizer for the duration of PS-II has taught me many lessons in life. Pfizer provides a open platform to share ideas without any skepticism. Pfizer provided me an industrial exposure to regulatory affairs department. It was a good learning experience. It helped me understand how the crucial this department is to bring a drug product in market and help in keeping it in market. Pfizer provided a good environment for exploring a new field in pharmaceutical industry. I am very much grateful to have got an environment to work where ideas can be shared freely , problems can be discussed with anyone ranging from executives to senior managers without hesitation.

Academic courses relevant to the project: Quality Assurance and Regulatory Affairs, Intellectual Property Rights.

Name: AMALA SAJU (2016H1460061H)

Student Write-up

Short Summary of work done during PS-II: The background for this work can be divided into the following sessions: The comparative study of the drug filings in US and Europe. Comparative study of ANDA and 505(b)2 NDA applications. Comparative study of DMF and ASMF. Understanding of Good ANDA Practices. Understanding the Refuse to receive standards and ICH guidelines. Categories of amendments in US and Europe. Deficiency letters issues by the agency with their respective timelines. This topic will attempt to clarify the intent and practicality of some of the common deficiencies cited throughout the dossier submissions. Applicants may use this information to build quality into their submissions. The common trends of deficiencies for the past 10 years, covering approx. 25 regulatory submissions in US and Europe, were identified and summarized as per CTD (common technical document) sections. The corrective strategies adopted and recommendations are provided. These deficiency queries might not represent the current deficiency scenario of Pfizer. But this will help the regulatory professional to ensure upfront that all the addressed details are included in the dossier. A deficiency questionnaire has been prepared addressing the deficiency trends over the past 10 years. This can be used as a checklist that will help the regulatory professional to ensure upfront that all the addressed details are included in the dossier.

Tools used (Development tools - H/w, S/w): The methodology for this project includes literature search for guidelines and articles which are relevant to the particular project topic.

Objectives of the project: To understand the common deficiency trends in orals and parenterals in US and Europe, To adopt strategies to reduce the number of deficiencies.

Major Learning Outcomes: Complete understanding of the types of regulatory filings in US and Europe. Understanding the common deficiency trends in regulatory submissions in orals and parenterals for a period covering 10 years. Adopting regulatory strategies to reduce the number of deficiencies to fasten the approval process.

Brief Description of working environment, expectations from the company: Pfizer understands that for prospective colleagues, a company's internal culture is as important as its external reputation. Innovative and new ideas are met with openness and careful consideration, not skepticism and dismissal. Pfizer provides the opportunity for candid and constructive debate with the group leaders and managers. It provides chances for the interns to come up with their views and strategies to ensure the technical use of

young and talented people where they are encouraged to have professional discussion with their mentors which helps in developing their skills. The working environment is set in a way to ensure the good work-life balance.

Academic courses relevant to the project: Quality Assurance and Regulatory Affairs, Intellectual property rights.

Name: V SAI HEMASRI (2016H1460069H)

Student Write-up

Short Summary of work done during PS-II: Chemistry, Manufacturing and Controls (CMC) changes are inevitable due to increase in the need for a better patient compliance, new findings and continuous improvement in the pharmaceutical field. Therefore, the need to evaluate and regulate the path of a product is of high significance. Failure to comply with regulatory requirements for post- approval CMC changes affects the sustainability of the product in the market. These should be taken very seriously because of the potential impact on patient safety and also regulatory and business impact for the manufacturer. The present study has focused on identifying the existing policies and procedure in this area and understanding the underlying concepts for post approval compliance for licenses pertaining to approvals. The methods involved comparing and contrasting the policies and procedures of regulatory authorities in US, EU and JAPAN. The major finding of the study indicates that a sound knowledge on the regulatory requirements across the globe for post approval changes benefits the regulatory professional to develop a well-defined life cycle management strategy which is crucial for the successful approvals and a better regulatory compliance.

Tools used (Development tools - H/w, S/w): Data for this report was obtained by three main methods. The first method involved browsing the websites of the Health Authorities (HAs) of different countries; for example, US Food Drug & Administration website for the US market and EMA website for EU market. The second method involved reviewing and summarizing guidelines/legislations from HA websites. The third method involved analyzing and correlating the data requirements from the relevant guidelines with the available review articles on the relevant topics.

Objectives of the project: The current study focus on the regulatory requirements for the Post approval changes of the products in the highly regulated markets. Learning of the post approval categories, the

notifying procedures in different markets like US, EU and Japan; analyzing the guidelines to develop an effective LCM strategy for successful approvals.

Major Learning Outcomes: Regulatory knowledge on POST APPROVAL CHANGES in the "Tripartite" markets. Improvement in the skill set for literature survey , report writing , oral presentations.

Brief Description of working environment, expectations from the company: It has a very challenging and ambitious colleagues. Every morning one can find a new enthusiasm to contribute his/her part for the company .There is a very interesting policy of the company which creates accountability for each and every employee and helps us own the work and the role with a very friendly set of guides and mentors who are always ready to help the subordinates. As a beginner, one can expect a huge deal of learning in technical aspects within as well as outside the role which is facilitated by various learning sessions conducted. This is a place which embraces fresh ideas in every aspect from job role to event management .The environment is set to ensure a perfect work-life balance. Hope the association with the company continues in the coming years and juniors will be able to avail themselves of this wonderful opportunity.

Academic courses relevant to the project: Quality Assurance and Regulatory Affairs, IPR and Pharmaceuticals.

PS-II Station: Piramal Group, Mumbai

Student

Name: Samyadeep Basu (2013B1A70401P)

Student Write-up

Short Summary of work done during PS-II: Analytics for piramal foundation and glass. Development of rule engine and predictive model for diabetes risk.

Tools used (Development tools - H/w, S/w): Python.

Objectives of the project: Improve operational efficiency at ground level in foundation.

Major Learning Outcomes: ML, python.

Brief Description of working environment, expectations from the company: Great.

Academic courses relevant to the project: Information retrieval.

Name: Shantanu Jain (2013B3A70547G)

Student Write-up

Short Summary of work done during PS-II: Developed Credit Risk Model and Identity authentication scorecard to detect fraud applications for Piramal Housing finance business.

Tools used (Development tools - H/w, S/w): Python, Pandas, Matplotlib, Selenium.

Objectives of the project: To provide probability of default on every incoming loan application on the basis of formal and informal sources of identity and financial information.

Major Learning Outcomes: Credit Risk modeling using Python.

Brief Description of working environment, expectations from the company: Good team to work with, flexible work timings and a very knowledgeable team of data scientists.

Academic courses relevant to the project: Money banking and financial markets, Object oriented programming.
